University of Nottingham

An investigation into the relationship between audit quality and its factors: Evidence from the FTSE 100

Mengjie Jia

MSc Finance and Investment

An investigation into the relationship between audit quality and its factors: Evidence from the FTSE 100

by

Mengjie Jia

September 2013

Declaration about the originality of the dissertation

I declare that this thesis dissertation is the result of an independent research I have made under the supervision of my supervisor. It does not contain any published or unpublished works or research results by other individuals or institutions apart from those that have been referenced in the form of references or notes. All individuals and institutions that have made contributions to my research have been acknowledged in the Acknowledgement. I am fully aware that I myself will bear all the legal responsibility arising from violation of the above declaration.

Signature: _____

Name: Mengjie Jia

Date: 20/09/2013

Acknowledgement

I would like to thank my supervisor, Dr. Kristie Thomas, for her kind support, input and guidance throughout the duration of this project. I am grateful to all my family and friends who have supported and encouraged me throughout this time. I would like to thank the University of Nottingham that provide useful resources to support my dissertation.

Abstract

The subject of the paper is to investigate the relationship between audit quality and its factors (including the audit client size, capital structure, audit fees, non-audit service fees, Big 4, firm tenure and cash from operations) during the financial crisis. The data of FTSE 100 from 2007 to 2011 will be selected as a sample for the study. Here the discretionary accruals as the proxy for audit quality will be calculated by Jones model and modified Jones model. Based on the prior studies, the regression model will be used to research the study. After the data and results analysis, it finds that the economic conditions and the method that can be used to measure the discretionary accruals may affect the relationship between audit quality and its seven factors. The paper contributes to extending the research field about related studies. It provides a new factor of economic conditions that can be considered by the studies related to the audit quality.

Key words: financial crisis; audit quality; UK audit market; the regression model

Contents

Chapter 1: Introduction

After the outbreak of the financial crisis, it has a negative influence on the global economy. People increasingly consider the topic about the financial crisis. Brown (1986) mentions, *"Whenever the advance of civilization brought about the necessity of one man being entrusted to some extent with the property of another the advisability of some kind of check upon the fidelity of the former would become apparent."* This implies that the auditing is vital for the economic development, because the auditing is required before any mandatory requirements about auditing (Zerni, 2009).

The financial crisis has caused the reduction of value of financial assets and bankruptcy after 2007. This proves that he crisis has negatively affected global economy. The issues about the financial crisis are very concerned by managers and shareholders. The agency problem exists between managers and shareholders. The auditor takes an important role to avoid the agency problem through providing high-quality audit. Therefore, the economic conditions can be considered, when the study about audit quality is investigated. Especially, the unexpected event (the financial crisis) occurs in recent years, because the one-off event may generate a big impact on audit

quality. Based on the above motivation, the report aims to investigate the relationship between audit quality and its factors (including the audit client size, capital structure of audited firms, audit fees, non-audit fees, Big 4, audit firm tenure and cash from operations) during the financial crisis. The UK audit market will be selected as a sample to research the topic.

1.1 Background

The interests of owners and managers are different, which could lead to the agency problem. For example, the interests of owners (such as shareholders) are going to get maximum profit from the firm; however, the interests of managers are going to get maximum bonus. The agency problem between owners and managers contributes to the requirements of auditor who can help the firm to publish fair and true financial information. The auditor can also help to reduce the information asymmetries between owners and managers within a firm, because the audit is independent from the management.

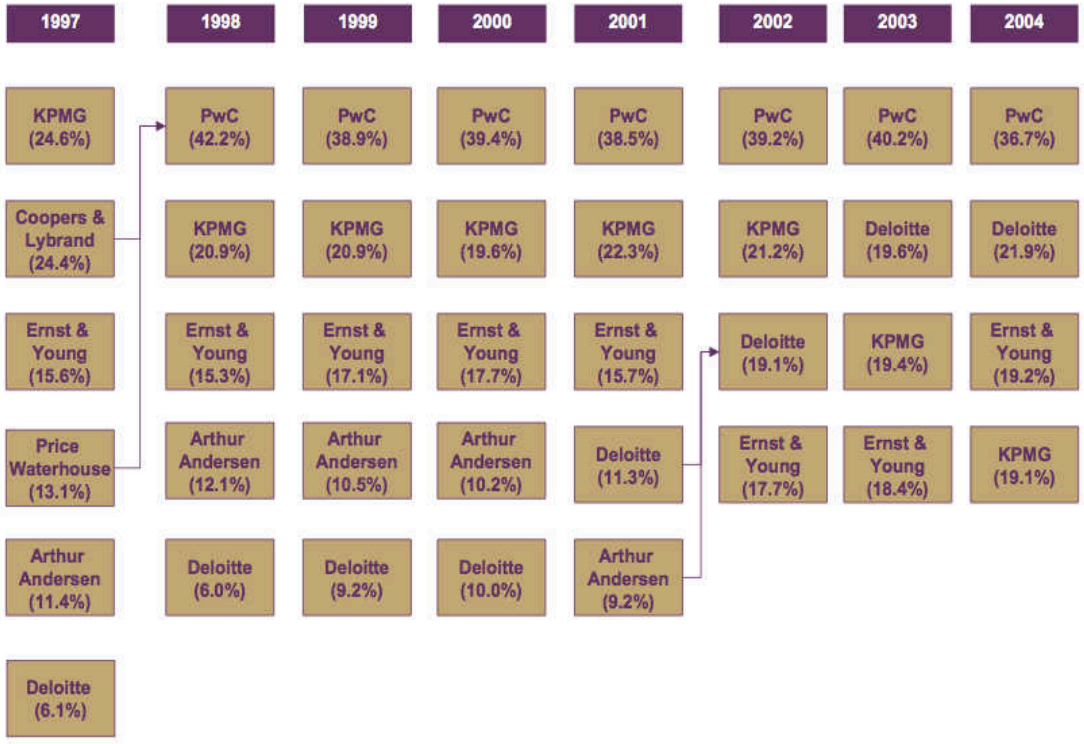
The boards of the directors may have influence on the selection of auditors, and the selection of auditors can affect the audit process and audit quality (Abbott et al. 2002; Chen et al. 2005). It is significant that auditor provides high-quality audit, because high-quality audit

can assist shareholders to understand the truth of the firm. DeAngelo (1981) provides the audit quality is *"the market assessed joint probability that a given auditor will both discover a breach in c client's accounting system, and report the breach."* If the audit quality is high, it can decrease the possibility of accounting fraud and illegal reporting activities.

Before the 1990s, the competition of UK audit market was high, and the audit fees were low. However, the Big 4 audit firms, which are Deloitte Touche Tohmatsu (DT), Ernst & Young (E&Y), Pricewaterhouse Coopers (PWC) and KPMG, dominate the UK audit market in recent years. The following diagram 1 represents the development of the market share between 1995 and 2004. In 1997, the merger of the Coopers & Lybrand and Price Waterhouse happened. After the merger, the Big 6 became to Big 5. In 2001, the collapse of Arthur Andeson (AA) contributes to high audit market concentration of Big 4. All of the above can cause the monopoly of the Big 4 for the UK audit market. The monopoly of the Big 4 negatively affects the independence of auditor. Comunale and Sexton (2003) and Moizer et al. (2007) point out that there is not an increasing trend on the concentration of Big 4 for UK audit market. Moreover, the Ballas (2005) summarises that the level of concentration does not increase

after the demise of Andersen. Therefore, the audit competition may be not increasing in short term.

The diagram 1.1: The development of the market share between 1995 and 2004



(Source: Oxera, 2006)

The auditor independence that can affect the audit quality has become a top concern, after the Enron Scandal occurred in 2001. New regulations that are used to improve the auditor independence have been initiated. The following section will describe the regulatory of UK audit market that intends to improve the auditor independence and audit quality.

1.2 The regulatory of UK audit market

In order to increasing the competition of UK audit market, the government planned to repeal the Auditing Committee (AC). Besides, the Office of Fair Trading (OFT) reviewed the issue of competition about the UK audit market, since the merger of PWC has happened in 1998. However, until 2011 there was no any reference made to the Competition Commission (CC).

The Enron financial scandal contributed to creating the passage of Sarbanes-Oxley Act of 2002 (SOX [2002]) that was designed to restore confidence in corporate governance. It is significant for auditing authorities to set up new regulations to improve the level of accountability, transparency, responsibility and fairness for the financial statement. This is to say it is important to increase the independence and objectivity of auditor. To improve the audit quality, it is vital for auditors to follow the auditing standard rules. Some countries (including the U.S., European Union and United Kingdom) have accepted a new auditing rule that stipulates a mandatory audit partner rotation. This implies that the government are increasing considering the auditor independence that can affect the audit quality.

In the UK, the Financial Reporting Council (FRC) commissions the report on competition and choice in UK audit market. The government delegates the Coordinating Group on Audit and Accountancy (CGAA) in order to reforming regulatory environments. After current financial crisis, the European Commission (EC) published the Green Paper for the sake of adjusting the audit regulation (Response to Green Paper, 2010).

After accepting the Public Company Accounting Oversight Board (PCAOB) Auditing Standard No. 2 (AS2), the audit fees were considerable increasing. There were many public firms complain the increasing audit fees (Johnson, 2005). To reduce audit fees, the PCAOB published the Auditing Standard No. 5 (AS5) instead of the AS2. Under the AS5, it uses a "top-down, risk-based" method, and others' work (such as management and internal auditors) can be used to simplify the internal control audit process (PCAOB, 2007; SEC, 2007). Wand and Zhou (2012) found that the AS5 could decrease the audit fees. The Doogar et al. (2010) and Krishnan et al. (2011) provided the same finding. Wand and Zhou (2012) also discovered that even though the audit fees were going down, the audit quality did not be affected after changing to AS5 from AS2. Overall, this implies that the AS5 brings the economic benefit without the decline in audit

quality. This may imply that the auditing standards are always changing over the year to find an appropriate regulatory to control the UK audit market.

1.3 The structure of the study

The report will be divided into seven chapters. The chapter one will describe the motivation and background related to the study. The chapter two will review prior studies that are related to the relationship between audit quality and its factors. The chapter three will introduce the methodology that will be used to investigate the study. Within the chapter, it includes the sample collection, the regression models that will be established for the study and the hypothesis development. The data and results analysis will be included in the chapter four. This chapter is important for the study to obtain some findings. The next chapter will conclude the report. Within the chapter, there are two further studies are recommended. At the same time, the chapter will summarise the main findings for the study. In chapter six, it includes references. And some diagrams that are related to the study will be shown in the chapter seven.

Chapter 2: Literature review

Knechel et al. (2013) say, "*An audit is a professional service delivered by experts in response to economic and regulatory demand.*" Normally, there are two types of studies about audit. The one is related to audit fees, and another is related to audit quality. The subject of the report is to investigate the relationship between audit quality and its factors including audit client size, capital structure of audited firms, audit fees, non-audit fees, Big-Four, audit firm tenure and cash from operations during the financial crisis. In the chapter, it will firstly define audit quality based on different stakeholders' viewpoints. And then it will review prior studies that have investigated the relationship between audit quality and its factors.

2.1 The definition of audit quality

To investigate the relationship between audit quality and its factors, it is important to understand the definition of audit quality. It is difficult to explain the definition of audit quality, because stakeholders (including the users, auditors, audit firm, regulators and society) have different understanding on audit quality (Knechel et al. 2013). The following diagram will summarise different viewpoints on audit quality from different stakeholders.

The diagram 2.1: The stakeholders' views on audit quality

The stakeholders in the financial reporting process	Explanations on high-quality audit
Users	There are no material misstatements within the financial reports.
Auditors	They can complete all tasks to satisfy the needs required by the firm's audit methodology.
Audit firm	The audit can protect the clients from the court of law.
Regulators	The audit meets all requirements provided by professional standards.
Society	It helps a company or the related market to avoid economic problems.

(Knechel et al. 2013)

After analysis of the above diagram, it is difficult to get a common definition of audit quality. There are some existing definitions on audit quality. Firstly, the audit quality can be taken as an outcome depended on the auditors' attributes. For example, DeAngelo (1981) thinks that audit quality is *"the market assessed joint probability that a given auditor will both discover a breach in a client's accounting system, and report the breach."* This implies that the auditor requires adequate capacity to find some misstatements on client's accounting system, and then the auditor should report these misstatements.

Secondly, based on the responsibilities of the auditor, the audit quality can be defined within the audit process. For example, high-quality audit can be achieved, if the auditor follows the Generally Accepted Auditing Standards (GAAS). The auditor has responsibilities to provide reasonable assurance that the audited financial statements are in line with the Generally Accepted Accounting Principles (GAAP) and there are not materially misstated within audited financial statements (GAO, 2003). Finally, the audit quality can be defined in the view of the poor audit quality that can lead to poor audit outcomes. However, it is difficult to find some actual cases of audit failures (Francis, 2011). Therefore, it is hard to research the issue of audit quality from this viewpoint. To sum up, there is no unified definition on audit quality. This report will combine the above opinions, when the definition of the audit quality is considered.

2.2 Audit client size

There is almost no research to investigate the relationship between audit quality and audit client size directly. There are some studies that have researched the influence of audit client size on independence and objectivity of auditor (Reynolds and Francis, 2001; Pratt and Stice, 1994). For example, Pratt and Stice (1994) stress that the professional judgment of auditor has an important role in the

decision-making process of audit. Normally, the auditor independence will decrease with the increase in the audit client size, because there is an inherent economic dependence of auditor on audit clients (DeAngelo, 1981; Mautz and Sharaf, 1961). That is to say that bigger audit clients can generate more fees that are paid to the auditor. For example, the economic dependence can be acted as a major factor that causes low-quality auditing report on Enron from Arthur Andersen (Healy and Palepu, 2003). The auditing standards are also considering the issue of the threat of economic dependence on audit dependence. For example, the Auditing Practices Board (APB) proposes that "*Where it is expected that the total fees for both audit and non-audit services receivable from a listed audited entity and its subsidiaries audited by the audit firm will regularly exceed 10% of the annual fee income of the audit firm, the firm shall not act as the auditor.*" (APB Ethical Standard 4, 2010).

The independence and objectivity of auditor are very significant to increase the reliability of financial statement. That is to say the both are vital for auditor to find material misstatements of financial statements (Aamir and Farooq, 2011). For example, the auditor finds that the financial statements are not in line with the GAAP. In the section 2.1, it has discussed the definition of audit quality based on

different views of stakeholders. If auditor can find material misstatements of financial statements within the audit process and the audited financial statements follow the GAAP, the high-quality audit will be obtained by the auditor. Therefore, the audit client size can affect the audit quality indirectly.

Overall, the audit client size has a negative influence on audit independence, and there is a positive relationship between audit independence and audit quality. This implies that the audit client size may be negatively related to the audit quality. It is worth noting that even though Reynolds and Francis (2001) investigate the influence of audit client size on audit independence based on the information from Big 5 audit firms, there is no evidence to support that the economic dependence is positively related to the audit client size.

However, there are some studies that provide larger client firm can cause the auditor is stricter within audit process compared with smaller audit clients. The reason can be that the risks of reputation loss and litigation are increasing larger for larger audit clients (Pierre and Anderson, 1981; Stice, 1991; Lys and Watts, 1994; Dye, 1993). When an auditor is accused of negligent auditing, this can have a negative influence on reputation of the auditor. Besides the negative

influence can be greater for larger audit clients compared with smaller audit clients. Within the litigation process about negligent audit, the auditor takes more potential costs about the litigation (Lys and Watts, 1994; Stice, 1991). Normally, auditors charge more money (more premium in the audit fees) to cover the risks of reputation loss and litigation for larger clients (Simon, 1985; Francis and Simon, 1987). Therefore, the auditor is stricter within audit process for larger audit client. If auditor can be stricter within the audit process, the audit quality will be higher. It implies that the audit client size may be positively related to the audit quality.

2.3 Capital structure of audited firms

Capital structure is determined by companies' financing decisions that can be influenced by the asymmetry of available information between companies and investors. If the audit quality is high, this will reduce the information asymmetry between companies and investors. The financial statement is very important to reduce the asymmetry of available information between companies and investors. That is to say that the auditors are vital to ensure the integrity of information and reduce the information asymmetry (Chang el al. 2009). Some factors can affect the capital structures, such as legal institutions. Companies in some countries, which have better legal institutions,

have more long-term debts in their capital structures compared with that in some countries that have relatively worse legal institutions (Giannetti, 2003; Fan et al. 2010). This implies that the debt maturity is more and more increasing with better legal institutions (Ghoul et al. 2011). Chang et al. (2009) find firms that are audited by Big-Six audit firms prefer to issue equity rather than to issue debt. The behavior can cause low leverage. Besides the companies are more likely to issue larger level of equity in the circumstance of favorable market conditions. Chang et al. (2009) find that the leverage of audited firms is less influenced by market conditions, if Big-Six audit firms audit these firms.

Normally, the Big-Four audit firms have a higher reputation compared with other audit firms. Besides the audit firms with higher reputation can provide higher-quality audit compared with other audit firms with lower reputation (Chang et al. 2009). There is a positive relationship between the level of debts in audited companies and selection of auditors with higher reputation (DeFond, 1992; Firth and Smith, 1992). This implies that if the audit client has higher leverage, the audit quality may be higher. The agency cost, which increases the percentage of debts, can cause the demand for an independence audit (Chow, 1982). This supports the positive relationship between

leverage and audit quality. The study of the Einchenseher and Shields (1986) also find the positive relationship between the both.

However, some other studies provide a completely different result that the level of debts in audited companies is negatively related to the selection of auditors with higher reputation (Simunic and Stein, 1987; Francis and Wilson, 1988). That is to say that higher leverage may lead to decreasing audit quality from auditors. When audited firms have higher level of leverage, they may prefer to change auditors to relatively lower-quality auditors (Johnson and Lys, 1990; Healy and Lys, 1986). The Onder et al. (n.d.) provide that researchers should consider the location of audited firms that may affect the capital structure. For example, even though the borrowing costs of audited firms in Turkey are very high, these companies prefer high level of leverage due to high tax benefits. Within the situation, the audited firms prefer to select lenient auditors rather than strict auditors that may cause low-quality audit. This supports the negative relationship between leverage and audit quality. In fact, larger auditors are normally selected to audit the firms with high level of equity compared with the firms with the high level of leverage. Based on the time-varying adverse selection, this implies the audit quality is negatively related to the leverage (Chang et al. 2009).

2.4 Total fees

Asthana and Boone (2012) point out that the auditor's expected future loss arising from the engagement and the units of audit resources expended can affect the auditor's expected fees (Simunic, 1980). The expected future loss can include the litigation losses and government penalties. To total fees that should be paid to auditors, there is a popular idea that the behaviour of auditors that receive more money from audit clients can potentially reduce the independence and objectivity of auditors. Because the behaviour implies the auditors have relatively high level of economic dependency. For example Magee and Tseng (1990) provide that low-balling and price-cutting for audit clients explain that auditors may be likely to retain these audit clients, which may reduce the independence of auditors and audit quality. Ashbaugh et al. (2003) show that there is a little of evidence that can support the independence of auditors can be negatively influenced by audit clients who pay high audit fees. Within the study, the total fees can be acted as a proxy for economic dependence.

The total fees that should be paid to auditors include audit fees and non-audit fees. The audit fees and non-audit fees are different (Srinidhi and Gul, 2007). Firstly, the audit market, during the

pre-Sarbanes-Oxley period, is more regulated compared with the non-audit market. Secondly, auditors should audit the listed firm, which is mandated. However, the listed firm has a choice to decide whether the non-audit service is required or not. Lastly, the competition is higher for audit market compared with the non-audit market (Healy and Palepu, 2003). The Canadian Public Accountability Board (CPAB) has found the issue of fee pressures (CPAB, 2010). For example, audit clients ask for the reduction of audit fees that are paid to audit firms. In other cases, audit firms have to reduce audit fees to attract new clients. Normally, audit firms put these fee pressures on incumbent auditors, which may contribute to reducing the audit quality. The following will provide the literature review on the relationship between audit quality and audit fees and non-audit fees separately.

- **2.4.1 Audit fees**

  Larger audit firms (such as Big-Six audit firms) require more money to provide auditing and related auditing service compared with other smaller audit firms (Ireland and Lennox, 2002). Normally, large audit firms (such as Big-Six audit firms) can provide high-quality audit. Based on the agency theory, it explains the relationship between principals and agents in

business, it considers that boards, which are more focusing on management, require higher-quality audit that can be as a result of higher effort from auditors. Thus higher audit fees should be paid to these auditors (Cohen et al. 2004). Srinidhi and Gul (2007) mention that audit fees are more likely to reflect the audit effort. Knechel and Willekens (2006) prove some evidence to support the idea based on the agency theory. Frankel et al. (2002) find that there is a negative relationship between unsigned discretionary accruals and audit fees. This implies that the relationship between audit fees and audit quality is positive (Chen and Xia, 2006). Overall, the above reflect that there may be a positive relationship between audit fees and audit quality.

However, Ashbaugh et al. (2003) find that the audit fees are not significant for abnormal accruals. Recently, auditors take more fee pressures. Simunic (1980) provides an explanation between audit fees and audit quality. This considers that audit fees can be seen as a by-product of a production function. It provides that if the firms have stronger governance mechanisms, the audit risk will be lower. Thus this can reduce audit effort and audit fees, but the audit quality may be improved through the strong internal corporate governance mechanisms. This implies that there may

be a negative relationship between audit fees and audit quality. Moreover, if audited firms are paying more audit fees to audit firms, this may increase the economic dependency of audit firms on audited firms. The increase of economic dependency may reduce the objectivity and independence of audit firms within the auditing process. Further, it may reduce the audit quality. This supports the negative relationship between audit fees and audit quality.

- **2.4.2 Non-audit fees**

  After major corporate failures (such as Enron scandal), United States (U.S.) proposed some restrictions on the non-audit services within the SOX 2002 (Reynolds et al. 2004). These restrictions on non-audit services are based on the idea that the non-audit fees can affect the audit quality (Kinney et al. 2004). This will help regulators to control and increase the audit quality. Kinney et al. (2004) find that if the audit client requires the non-audit services, the auditor can obtain relatively integral information for the audit client (such as the information of internal system). Thus the extensive information will help the auditor to understand the audit client well and to prepare an appropriate audit report for the audit client. Further, the non-audit fees can

improve the audit quality rather than reduce independence of auditors. This supports that the audit quality may be positively related to non-audit fees.

However, Frankel et al. (2002) and Nelson (2002) provide that there is a positive relationship between non-audit fees and absolute discretionary accruals. If the firms have weak corporate governance, the discretionary accruals will be positively related to the audit fees (Larcker and Richardson, 2004). Normally, it is assumed that if the discretionary accruals are higher, the earnings quality and audit quality are lower. Thus the positive relationship between non-audit fees and absolute discretionary accruals implies that non-audit fees are negatively related to the audit quality. It is worth noting that the finding from Frankel et al. (2002) may be not universal, because Frankel et al. (2002) are just using one-year data to obtain the result, which can cause idiosyncratic results (Kinney and Libby, 2002; Reynolds et al. 2004).

It is worth noting that Ashbaugh et al. (2003) prove that the non-audit fees have no influence on discretionary accruals. Besides, Chung and Kallapur (2003) do not find negative

influence of non-audit fees on discretionary accruals, when the revenue of audit clients are normalised. Kinney et al. (2004) cannot find definitive influence of non-audit fees on restatements. If audit quality is high, the possibility of restatements will be low. Therefore, the number of restatements can reflect the level of audit quality.

2.5 Big 4 audit firms or not

Gapper (2011) points out that Big-Four firms including PwC, Deloitte, KPMG and E&Y audit 99 percent FTSE 100 and 95 percent FTSE 250. It is important to consider the factor of Big 4 auditors. Lawrence et al. (2011) summary that *"The effects of Big 4 auditors are insignificantly different from those of non-Big 4 auditors with respect to three audit-quality proxies."* The three audit-quality proxies are including the discretionary accruals, the en ante cost-of-equity capital, and the analyst forecast accuracy. Generally, the audit quality of Big 4 audit firms is superior compared with that of non Big 4 audit firms (Lawrence et al. 2011, Raman and Wilson, 1994; Teoh and Wong, 1993). Larger audit firms can provide higher audit quality, because they have larger reputations that should be protected (Dopuch and Simunic, 1980) and they also want to avoid the costly litigation (Khurana and Raman, 2004; DeAngelo, 1981; Francis and Krishnan,

1999). Based on the theoretical support of DeAngelo (1981) and Dopuch and Simunic (1980), there are some studies find some evidence to support that Big 4 audit firms can bring higher-quality audit compared with the non-Big 4 audit firms (Palmrose, 1988; Khurana and Raman, 2004; Behn et al. 2008). Becker et al. (1998) report that the audit clients, who are audited by Big 4 auditors rather than non-Big 4 auditors, show lower absolute discretionary accruals. The Big 4 auditors may restrict opportunistic and aggressive reporting, because the audit clients that are audited by Big 4 auditors have higher total accruals and lower discretionary accruals compared with the audit clients that are audited by non-Big 4 auditors (Francis et al. 1999). All of the above imply that audit quality is higher, if the firms are audited by Big 4 auditors rather than by non-Big 4 auditors.

Normally, prior studies provide that the Big 4 auditors can bring higher-quality audit compared with non Big 4 auditors, because the Big 4 firms have larger reputation that should be protected. However, Elsenberg and Macey (2004) cannot find any evidence to support that the audit quality from Big 4 and Arthur Andersen is different. Besides, Khurana and Raman (2004) find that the litigation exposure rather than the reputation protection is a reason to encourage Big 4 auditors to get high-quality audit. Fuerman (2006) provides that there is no

difference on audit quality of Big 4 audit firms and non-Big 4 audit firms from 1996 to 1998. Within the study, he analyses the data collected from Big 4 and Arthur Andersen. However, he also finds that Big 4 firms, from 1999 to 2004, can bring higher-quality audit compared with Arthur Andersen. The reason is that the Arthur Andersen has systemic and structural defects. But if the Big 4 firms are compared separately with Arthur Andersen, the results are not entirely supporting the result that Big 4 have higher-quality audit compared with non-Big 4. For example, Deloitte that is one of the Big 4 does not appear to be a higher quality auditor, who may lead to higher-quality audit, compared with Arthur Andersen. It is worth noting that the overall audit quality for Big 4 and Arthur Andersen has declined after following the Private Securities Litigation Reform Act of 1995 (PSLR 1995).

2.6 Audit firm tenure

Audit firm tenure is the length of years that the firm retains to use the same audit firm (Johnson et al. 2002; Carcello and Nagy, 2004). To improve the quality of financial reporting, the mandatory audit firm rotation that can be added to accounting policy may be acted as a solution. In U.S., the SOX were just requiring the mandatory audit partner rotation rather than mandatory audit firm rotation. The SOX

gave a task to GAO who investigated a research on the effects on audit quality from audit firm rotation. It provides *"Mandatory audit firm rotation may not be the most efficient way to strengthen auditor independence and improve audit quality"* (GAO, 2003). Based on the investigation on the relationship between the type of audit viewpoint on the financial statement prior to bankruptcy and the audit firm tenure, it provides that audit-reporting failures are more likely occurring when the audit firm tenure is shorter. This reminds that the auditor should consider the going concern problem within the audit procedure.

In the viewpoint of investors, they believe that longer audit tenure can result in higher-quality audit (Ghosh and Moon, 2004). Jackson et al. (2008) provide some evidence to support the above opinion from investors. There are some studies that represent longer audit firm tenure contributes to obtaining higher-quality audit (Myers et al. 2003; Johnson et al. 2002). For example, Johnson et al. (2002) point out that the quality of financial reporting is lower within the short audit firm tenure (2 to 3 years) compared with the medium audit firm tenure (4 to 8 years). The Carcello and Nagy (2004) support the finding of John et al. (2002). The reason for the positive relationship between audit firm tenure and audit quality can be that when the

audit firm tenure is longer, the auditor may be more likely to restrict the firm's ability of window dressed earnings that means that the presented earnings in financial reporting looks better than the actual earnings. Some other studies find that the audit failures are more likely to occur in the earlier years of the audit-client relationship rather than in the later years of the audit-client relationship (Geiger and Raghunanda, 2002; Johnson et al. 2002; Ghosh and Moon, 2005). These studies support that the longer audit firm tenure may increase the audit quality. Gul et al. (2009) explain that the new auditor require much time to know about the client and related industry knowledge. It means that the new auditor lack knowledge and experience about the client and its industry. But the previous auditor has much expertise about the client and its industry, which can help the auditor to understand the financial report that should be audited. Furthermore, this contributes to obtaining high-quality audit. All of the above implies that there may be a positive relationship between audit firm tenure and audit quality.

However, Davis et al. (2003) and Castarella et al. (2002) and Francis (2004) provide a different viewpoint of the relationship between audit firm tenure and audit quality. They find that the discretionary accruals increase with a longer audit firm tenure. This means that longer audit

firm tenure can decrease audit quality. Overall, the audit quality can be lower in the earlier years of the audit-client relationship, because the new auditor does not have much knowledge and experience about the client. But the audit quality can be lower in the later years of the audit-client relationship, because the longer audit firm tenure may lead to reducing the objectivity and independence of auditors. It is worth to noting that it is more expensive for audit firms and clients to change audit firm than change audit partner (Chen et al. 2008). For example, if the audited firms require rotating the audit firm, the auditor should take much existing resources (such as time and human) to understand the client and the audited firm may require helping the auditor to know about the firm (such as the internal control system and accounting system).

2.7 Cash from operations

Bhundia (2012) provide that the cash from operations can be used to invest in new fixed asset to maintain current level of operating activities, and it also can be distributed as a dividend (or share-repurchase) to satisfy the requirements of shareholders. This implies that it is inappropriate to consider the ability of a firm that is to generate cash flows focused on cash flows from operating activities only. Jensen (1989) introduced the free cash flows theory that

assumes that the excessive free cash flow can cause over investment (Richardson, 2006; Wei and Zhang, 2008). Here the free cash flow is the cash flow from operations after deducting the cash that is used to invest in some projects of positive net present value. The earnings management, which is controlled by managers, is vital for auditors to receive information. Therefore, it may generate an important influence on audit quality directly (Scott, 1997; Healy and Wahlen, 1998).

Astami et al. (2012) and Ebrahim (2001) find that the audit quality is negatively related to earnings management. The firms with high free cash flow allied to low-growth opportunities depended on the agency cost theory. This means that managers cannot maximise the shareholders' wealth, thus they can use accounting discretion to increase earnings in the financial reporting. Normally, managers rather than shareholders directly appoint the auditors that should agree that the managers could use the accounting discretion to increase the earning in the audit report. For example, if the excessive free cash flows are low, the managers may want to increase earnings for shareholders. This may decrease the audit quality, because the independence between the auditor and the manager can be adversely influenced. Dechow (1994) points out that there is a negative

relationship between cash flows from operating activities and accruals. It implies that the audit quality could be positively to cash flows from operating activities.

It is worth noting that higher-quality auditors are more likely to report errors and irregularities of the audited financial reporting, and they are not willing to accept questionable accounting management (Lai, 2009; Bartov et al. 2001; Gul et al. 2009; Gul et al. 2010; Bliss et al. 2011). This supports that high-quality audit can moderate the relationship between cash flows from operating activities and discretionary accruals. There is no evidence can support that the importance of clients has a influence on the independence of auditors, and the auditors can allow big clients to report more accounting discretion (Ebrahim, 2001). The following chapter will design a research to investigate the relationship between audit quality and its factors.

Chapter 3 Methodology

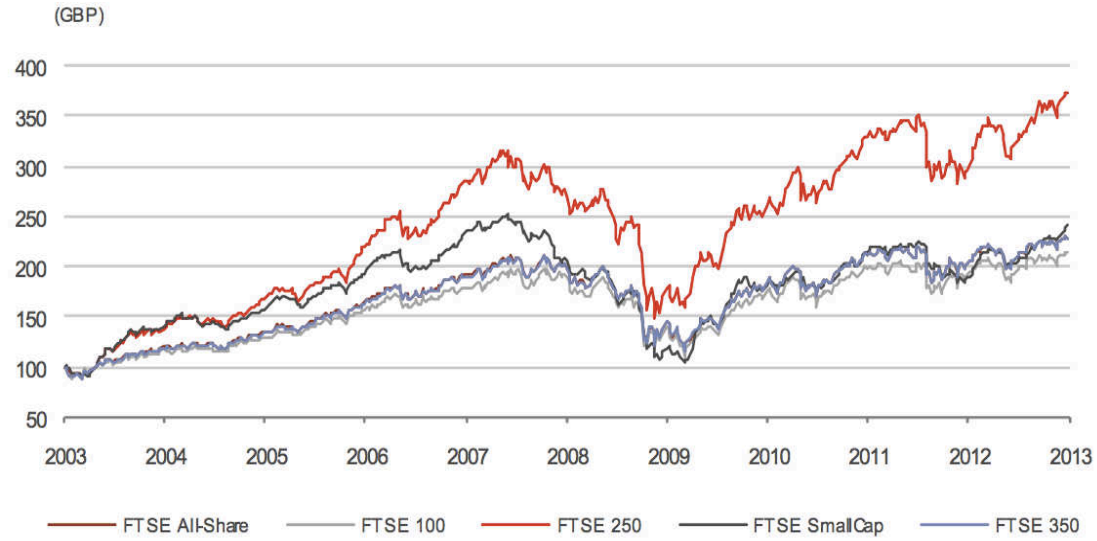
This chapter will introduce the methodology that will be used to investigate the study about the relationship between audit quality and its factors during the financial crisis. Firstly, it is significant to ensure a research question. As discussed on the chapter 1, the unexpected event (the financial crisis) occurs in recent years, and people are increasingly concerned about the topic about financial crisis. Therefore, the report designs a research question that whether the audit quality can be affected by economic condition crisis. Secondly, it will introduce how the sample is selected and collected. Thirdly, the regression model will be used as an approach to answer the research question. Within the section, it will explain how the dependent variable (audit quality) and the independent variables (including the audit client size, capital structure of audited firms, audit fees, non-audit fees, Big4, audit firm tenure and cash from operations) are measured. And then, it will show limitations of the methodology. Lastly, the expected results about the relationship between audit quality and its factors will be given based on prior studies.

3.1 Sample collection

For the study, all of the financial data are from UK companies. As we known, the current financial crisis, which was caused by bursting of

the housing bubble, began in 2007. The Great Depression was further spreading around the global in 2008 (Jickling, 2010). Firstly, it is significant to decide which years are required to be selected to reflect the period of financial crisis for the report. The following diagram, which describes the total return of FTSE All-Share, FTSE 100, FTSE 250, FTSE SmallCap and FTSE 350 from 2003 to 2013, is helpful to select sample.

The diagram 3.1: 10-Year Performance-Total Return (GBP)



(Source: FTSE Factsheet, 2012)

After analysing the above diagram, the tendency of the total return from 2003 to 2013 about the FTSE All-Share, FTSE 100, FTSE 250, FTSE SmallCap and FTSE 350 is similar. From 2007 to 2009, the total return was sharply decreasing to the lowest point, and it was

gradually increasing from 2009 to 2011. After 2011, the fluctuation of total return is small. This might imply that the decline on total return from 2007 to 2009 was severely influenced by the financial crisis that is unpredictable, and the negative influence was gradually weakened in 2009. Therefore, the study, based on the above analysis, will select FTSE 100 from 2007 to 2011 as a sample to investigate the relationship between audit quality and its factors.

All of the financial data of the FTSE 100 are from the FAME. Firstly, the financial industry will not be considered by the report. The reason is that the published financial reporting cannot represent actual revenue and losses for financial industry (especially for the bank industry), and the accounting requirements are different between financial industry and other industries. Therefore, the financial industry and other industries are not comparable. Secondly, the date of year-end shown in the financial statement is different. Hence, it requires selecting a unified year-end date. The report wants to choose five years data, thus it is more likely to select 31st December as year-end date. Therefore, the companies, whose year-end date is not on 31st December, will not be included in the study. Lastly, the company of International Airlines Group (IAG), which belongs to the FTSE 100, will be excluded by the report. Because the report is going to collect

five-years financial data from 2007 to 2011; however, it is impossible to collect five-years financial data for the IAG that was formed in 2011. It is worth noting that the financial data will be unified in million to increase the comparability. The following diagram will describe the number of the observations each year.

Diagram 3.2: The number of the left companies	
FTSE 100	100
Financial industry	(20)
The year-end date (not 31st December)	(32)
The IAG	(1)
Left number of the companies	47

After ensuring the sample, it is important to design a research to answer the research question that whether the audit quality can be affected by economic condition. To answer the research question, the report expects to know the relationship between audit quality and its factors from 2007 to 2011 separately. If the relationship between audit quality and its factors is different every year, this may support that the financial crisis can affect the audit quality. That is to say that the economic condition may have an influence on audit quality.

It is worth noting that there are other factors (such as inflation and psychological factor) that may affect the economic condition. For the

study, it is assumed that the economic condition is only affected by the financial crisis. The following will ensure the model that will be used to investigate the relationship between audit quality and its factors.

3.2 The direct and indirect measures of audit quality

There are direct and indirect measures of audit quality. The direct measures are normally including the desk reviews (Colbert and O'Keefe, 1995; Westort, 1992), SEC performance (Dechow et al. 1996), financial reporting compliance with GAAP (Krishnan and Schauer, 2000), quality control review (Deis and Giroux, 1992; Deis and Giroux, 1996) and bankruptcy. For instance, Geiger and Raghunandan (2002) consider that the audit quality can be measured as whether the auditor has issued a going-concern qualification in the prior year clients that declared bankruptcy. They present that the auditor are less likely to issue a going concern option during the initial years of engagement rather than in later years of engagement. This suggests that long auditor-client relationship can contribute to decreasing the audit quality. However, these direct measures are not always occurring or available. For example, bankruptcies are not often appearing, hence it is impossible to collect the data that are related to the bankruptcy. Therefore, the indirect measures of audit

quality (including the audit size, auditor tenure, the cost of capital and so on) are more frequent used by some studies (Woodland and Reynolds, 2003).

Here, the report will select the indirect measures to measure the audit quality. Based on the chapter of literature review, there are seven indirect measures of audit quality are reviewed. Therefore, the study will choose these indirect measures of audit quality to investigate the relationship between audit quality and its factors.

3.3 The regression model

The regression model is appropriate to research the multivariate analysis. Based on the chapter of literature review, the estimated Ordinary Least Squares (OLS) can be used as a model to investigate the relationship between audit quality and its factors during the financial crisis (for example Manry et al. 2003; Wang and Zhou, 2012; Chi et al. 2009). For the estimated OLS model, it is important to ensure the proxies for audit quality and its factors (including the audit client size, capital structure of audited firms, audit fees, non-audit fees, Big 4, audit firm tenure and cash from operations). The following will provide proxies for audit quality and its factors.

- **3.3.1 Proxies for audit quality**

The estimated discretionary accruals can be considered as a proxy for audit quality and earnings quality (Johnson et al. 2002; Myers et al. 2003; Healy, 1985; Dechow et al. 1995; Subranyam, 1996; Francis et al. 1999; Yu and Francis, 2009; Krishnan, 2003; Dechow and Dichev, 2002 and Manry et al. 2003). It is assumed that if the estimated discretionary accruals are higher, the audit quality is lower. Within a company, the owners and managers are different people. Their interests are different, for example the managers want to get more bonus rather than to maximise the value of shareholders. Healy and Wahlen (1998) write, *"Loan loss reserves for bank and property casualty claim loss reserves are highly dependent on management's judgment, are directly related to their most critical assets and liabilities."* This implies that the earnings management can contribute to the principal-agency problem that provides the conflict of interests between managers and owners. For example, the managers can show a window dressed performance through the earnings management. To reduce the problem, the auditors are significant to provide a high-quality audit that can restrict the high-level window dressed performance shown in the financial reporting statement (Porter et al. 2008). Due to the simplicity, the Jones

model and the modified Jones model are commonly used to detect the earnings management and discretionary accruals, (Almeida et al. n.d.; Dechow et al. 1995; Young, 1999).

3.3.1.1 The Jones model

Jones (1991) proposes a model for total accruals to control for changes in the economic circumstances of the firm as follows.

$$\frac{TA_{it}}{A_{it-1}} = \alpha_i \left[\frac{1}{A_{it-1}}\right] + \beta_{1i} \left[\frac{\Delta REV_{it}}{A_{it-1}}\right] + \beta_{2i} \left[\frac{PPE_{it}}{A_{it-1}}\right] + \varepsilon_{it}$$

where:

TA_{it} is the total accruals for firm i in year t

A_{it-1} is the total assets for firm i in year t-1

ΔREV_{it} is the change of revenue from year t-1 to year t for firm i

PPE_{it} is gross property, plant and equipment for firm i in year t

ε_{it} is the error term for firm i in year t (it represents the discretionary accruals)

There are three reasons that he Jones model is used to calculate the discretionary accruals. Firstly, the model considers the time factor and firm factor. Secondly, it is easy to understand the theory that how the discretionary accruals are computed. Lastly, it is easy to obtain the all of the required variables within the

model.

For the Jones model, the total accruals cannot be directly obtained from the financial reporting statement. Following the Healy (1985) and Jones (1991), the balance sheet approach can be applied to calculate the total accruals as follows.

$$TA_t = \Delta CA_t - \Delta Cash_t - \Delta CL_t + \Delta DCL_t - DEP_t$$

where:

TA_t is the total accruals in year t

ΔCA_t is the change of current assets from year t-1 to year t

$\Delta Cash_t$ is the change of cash and cash equivalents from year t-1 to year t

ΔCL_t is the change of current liabilities from year t-1 to year t

ΔDCL_t is the change of debt included in current liabilities from year t-1 to year t

DEP_t is the depreciation and amortization in year t

3.3.1.2 The modified Jones model

To eliminate the conjectured tendency of the Jones model, the modified Jones model is designed. The modified Jones model removes the receivables from the revenue to eliminate the

conjectured tendency. The following shows the modified Jones model.

$$\frac{TA_{it}}{A_{it-1}} = \alpha_i \left[\frac{1}{A_{it-1}}\right] + \beta_{1i} \left[\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}}\right] + \beta_{2i} \left[\frac{PPE_{it}}{A_{it-1}}\right] + \varepsilon_{it}$$

where:

TA_{it} is the total accruals for firm i in year t

A_{it-1} is the total assets for firm i in year t-1

ΔREV_{it} is the change of revenue from year t-1 to year t for firm i

ΔREC_{it} is the change of net receivables from year t-1 to year t for firm i

PPE_{it} is gross property, plant and equipment for firm i in year t

ε_{it} is the error term for firm i in year t (it represents the discretionary accruals)

- **3.3.2 Proxies for dependent variables**

After ensuring the proxies for audit quality, it is also significant to know how to measure the seven dependent variables of audit quality (including the audit client size, capital structure of audited firms, audit fees, non-audit fees, Big 4, audit firm tenure and cash from operations).

3.3.2.1 Audit client size

There are many studies using the total assets to measure the

audit client size; however, the turnover can be a better proxy for audit client size (Pong and Whittington, 1994; Chan et al. 1993). The reason is that the total assets may be significantly different for similar companies, if these similar companies choose the different accounting policy, such as the method of fixed assets revaluations, the method of depreciation and goodwill. Compared with total assets, the turnover is less influenced by the choice of accounting policy and financial structure. Therefore, the study will select the turnover to measure the audit client size. It is worth noting that the definition of turnover is different between similar firms. Here the logarithmic form of turnover will be used to measure the audit client size. The natural logarithmic form decreases the influence that is mainly caused by the outlier, and it also helps to reduce the potential effects of non-linearity.

3.3.2.2 Capital structure of audited firms

When capital structure is measured, it is significant for researchers to consider the total leverage, long-term leverage and short-term leverage (Rajan and Zingales, 1995). Thus there are three types of leverage as follows.

Total leverage (TL) = book value of total debt/total assets

Long-term leverage (LTL) = book value of long-term debt/total

assets

Short-term leverage (STL) = book value of short-term debt/total assets

Here, the total leverage will be selected to measure the capital structure of audited firms, because the total leverage considers long-term and short-term debts. Thus, it can integrally display the debt-assets relationship. Market value of firm cannot affect the debt-assets ratio (Modigliani and Miller, 1958). Besides, no matter the book value or market value of debt is used, the relation between determinants of capital structure and leverage will not be influenced (Titman and Wessels, 1988). It is easier to get book value compared with market value. Therefore, the book value of debt will be selected to compute the leverage. Based on the above formula of total leverage and Nagy (2005), the leverage for the study will be calculated by total liabilities in year t divided by total assets in year t-1.

3.3.2.3 Audit fees & Non-audit fees

Kinney and Libby (2002) explain that audit fees and non-audit fees have influence on independence of auditors, and the both can lead to economic bonding. Even though the both can cause

economic bonding, the audit fess are more likely reflecting the level of audit effort and audit quality rather than the economic bonding (Srinidhi and Gul, 2007). Some studies select the ratio of non-audit fees to total fees (including audit fees and non-audit fees) to measure the economic bond; however, the ratio cannot obtain the total economic importance of the client to the auditor (Ashbaugh et al. 2003). Reynolds and Francis (2001), Larcker and Richardson (2004), Chung and Kallapur (2003) and DeAngelo (1981) successfully use the total fees to measure the economic bond. Here, the total fees will be divided into audit fees and non-audit fees for the study. The audit fees and non-audit fees will be transformed into natural logarithmic form to reduce the influence that is mainly caused by the outlier and decrease the potential effects of non-linearity.

3.3.2.4 Big 4

The Big 4 is a dummy variable. If the auditor is from a Big 4 audit firm, the dummy variable is equal to 1. Otherwise, the dummy variable is equal to 0.

3.3.2.5 Audit firm tenure

If the audit firm tenure is less or equal to 3 years, it is defined as

short audit firm tenure. If the audit firm tenure is over 3 years, it is defined as long audit firm tenure (Gosh and Moon, 2005; Geiger and Raghunandan, 2002). Here, the dependent variable of audit firm tenure is a dummy variable. If the same audit firm has audited the firm for over 3 years, then the dependent variable will be equal to 1. If the firm has been audited by the same audit firm for 3 years or less, the dependent variable will be equal to 0.

3.3.2.6 Cash from operations

Cash from operations can be acted as a measure of the amount of cash that are generated by corporate normal business operations. It is important to decide whether the firm is able to make sufficient cash to maintain and grow its businesses, and it is also important to decide the financing structure. For example, if the firm does not have sufficient cash generated from the operating businesses to support its businesses, the external financing may be required. Nagy (2005) describes that the cash from operations are the cash from operations in year t divided by total assets in year t-1.

Based on the above proxies for the audit quality and dependent variables, there are two models related to audit quality (AQ) can be

established as follows.

$$AQ1: DA_{Jones\ model} = \beta_1 + \beta_2 SIZE + \beta_3 LEVERAGE + \beta_4 LnAF + \beta_5 LnNAF + \beta_6 Big\ 4 + \beta_7 TENURE + \beta_8 CFO$$

$$AQ2: DA_{Modified\ Jones} = \beta_1 + \beta_2 SIZE + \beta_3 LEVERAGE + \beta_4 LnAF + \beta_5 LnNAF + \beta_6 Big\ 4 + \beta_7 TENURE + \beta_8 CFO$$

where:

$DA_{Jones\ model}$ is the discretionary accruals based on the Jones model

$DA_{Modified\ Jones}$ is the discretionary accruals based on the modified Jones model

SIZE is the natural logarithm of total revenue in year t

LEVERAGE is the total liabilities in year t divided by total assets in year t-1

LnAF is the natural logarithm of audit fees

LnNAF is the natural logarithm of non-audit fees

Big 4 is a dummy variable; if the firm is audited by Big 4, it is equal to 1; otherwise it is equal to 0

TENURE is the audit firm tenure that is a dummy variable; if the firm has audited by the same audit firm for over 3 years, it is equal to 1;

otherwise it is equal to 0.

CFO is the cash from operations in year t divided by the total assets in year t-1

3.4 Hypothesis development

It is important to provide hypothesis development, which can be taken as an important step of designing research. Based on the chapter of literature review, there are some hypothesis will be provided for the report as follows.

H_1: Audit client size will have a negative effect on audit quality.

The main reason for the hypothesis that audit client size may have a negative effect on audit quality is the economic dependence that larger clients can create for their auditors. Especially for the period of financial crisis, the auditor may be afraid losing larger clients. The economic dependence will generate a negative influence on independence and objectivity of the auditor. This implies that the audit quality can be negatively influenced by the economic dependence that the larger audit clients create.

H_2: The leverage will have a positive/negative effect on audit

quality.

Firth and Smith (1992) and DeFond (1992) provide that there is a positive relationship between the level of debts and selection of auditors with higher reputation. This implies that there is a positive relationship between audit quality and leverage. However, Simunic and Stein (1987) and Francis and Wilson (1988) point out a different viewpoint on the relationship between audit quality and leverage. Therefore, the leverage may either negative or positive effect on audit quality.

H_3: Audit fees will have a negative effect on audit quality.

During the period of financial crisis, the auditor may be more depended on the clients because of the economic dependence. When more audit fees are paid to an auditor, the auditor may allow more earnings management that contributes to reducing the audit quality. Therefore, the higher audit fees will have a negative effect on audit quality.

H_4: Non-audit fees will have a negative effect on audit quality.

As the same reason of H_3 that audit fees will have a negative effect on audit quality, the non-audit fees will have a negative effect on audit quality.

H_5: The Big 4 will do not have a positive/negative effect on audit quality.

Based on the past studies, it is difficult to say whether the Big 4 can bring higher-quality audit or not. For example, prior studies provide that the Big 4 normally can bring higher-quality audit compared with non Big 4 auditors; however, Elsenberg and Macey (2004) cannot find any evidence to support that the audit quality from Big 4 and Arthur Andersen is different. The Fuerman (2006) also provides that there is no difference on audit quality of Big 4 audit firms and non-Big 4 audit firms from 1996 to 1998. Therefore, the Big 4 may have neither negative nor positive effect on audit quality.

H_6: Audit firm tenure will have a positive effect on audit quality.

Normally, the longer audit tenure can result in higher-quality audit. It is important for audited firms to keep a good relationship with their auditors during the period of financial crisis. If the auditor is changed, the new auditor requires much time to know about the client and related industry knowledge. This may contribute to generating low-quality audit, especially for the period of financial crisis. Therefore, the audit firm tenure will have a positive effect on audit

quality.

H_7: Cash flow from operations will have a positive effect on audit quality.

Astami et al. (2012) and Ebrahim (2001) find the audit quality is negatively related to earnings management. If the cash from operations are high, the managers may do not require much earnings management (such as accounting discretion) to increase earnings in the financial reporting statement. Dechow (1944) points out that there is a negative relationship between cash flows from operating activities and accruals. Therefore, cash flow from operations will be positive effect on audit quality.

After designing the research, the results will be shown in the next chapter. The actual results about the relationship between audit quality and its factors will be compared with the expected results that are based on literature reviews. Some new findings may be shown in the following chapter.

Chapter 4: Data analysis and Discussion

After the above methodology is designed to investigate the relationship between audit quality and its factors during the financial crisis, there will be some findings. Within the chapter, it is focused on the data and result analysis. Firstly, it will describe the characteristics of the observed data. Secondly, the regression results will be described after describing the data. Thirdly, the test of correlation will be applied to detect the correlation among independent variables (including the audit client size, capital structure, audit fees, non-audit fees, Big 4, firm tenure and cash from operations). If the correlation among these independent variables is high, this may negatively affect the effectiveness of the regression models. And then, all of the results and expected results will be put together, and then the report will present an overall analysis for these results. Finally, the limitations of the study will be given.

4.1 Data analysis

It is important to know the characteristics of the observed data, before the report is going to discuss the regression results. The data analysis helps to understand the regression results deeply. Firstly, it will describe the characteristics of the observed data from 2007 to 2011 separately. And then, it will summarise the overall characteristics of the data over the five years. To distinguish each variable, the following diagram will show some abbreviations for data's names.

The diagram 4.1: The abbreviations for variables

The abbreviation	The full name
MDA	The discretionary accruals based on the modified Jones method
DA	The discretionary accruals based on the Jones method
SIZE	The audit client size that is the natural logarithm of total revenue in year t
LEVERAGE	The capital structure of audited firms that is measured by the total liabilities in year t divided by total assets in year t-1
LNAF	The variable of audit fees is measured by the natural logarithm of audit fees
LNNAF	The variable of non-audit service fees is measured by the natural logarithm of non-audit service fees

BIG4	Whether the firm is audited by Big 4 audit firms or not
FT	The audit firm tenure
CFO	The variable of cash from operations is measured by the cash flows from operations in year t divided by the total assets in year t-1

After rename these variables, the following will explain the characteristics of collected data from 2007 to 2011 separately.

2007

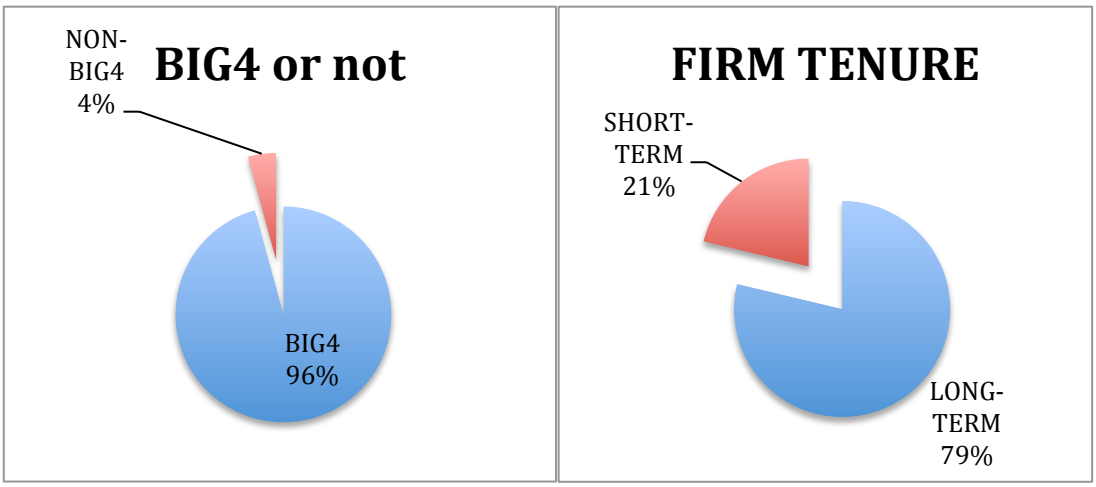
The diagram 4.2: The summary of the variables in 2007

stats	mda2007	da2007	size2007	lev~2007	lnaf2007	lnn~2007	cfo2007
mean	-.0012953	-.0012987	7.228643	.6424476	.6311135	.1890392	.1147973
sd	.0949108	.0949122	3.235943	.3985368	1.194553	1.221871	.0967701
cv	-73.27122	-73.08079	.4476557	.6203414	1.892771	6.463584	.8429652
min	-.1623621	-.1623616	0	0	-1.427116	-3.036554	-.0591517
max	.4542038	.4542063	13.75406	2.18139	3.218876	2.639057	.38509

The above table summarises variables in 2007. Here, the coefficient of variation will be used to observe the degree of variation, and it considers the mean and standard deviation together. If its value is smaller, the degree of the deviation and risk is smaller, and vice versa. To MDA and DA, they almost have the same mean, standard deviation, coefficient of variation, minimum and maximum values. This may implies that the discretionary accruals based on the method of Jones

and modified Jones do not have significant different. Compared with other variables, the absolute value of MDA and DA's coefficient of variation are much higher compared with other variables. This may implies that the extreme values are more likely appearing in the data set of MDA and DA. Thus these extreme values may cause the regression (between MDA (or DA) and independent variables) is relatively accurate. The following diagram will describe the variables of BIG4 and FT.

The diagram 4.3: BIG4 and FT in 2007



The above diagram shows that the Big 4 audit firms almost audited all of the FTSE 100 in 2007. There were only 4% firms that were not audited by the Big 4 audit firms. Besides, 79% of firms were going to maintain a long-term relationship with their auditors in 2007. This could imply the Big 4 audit firms were almost monopolise the UK audit market of FTSE 100.

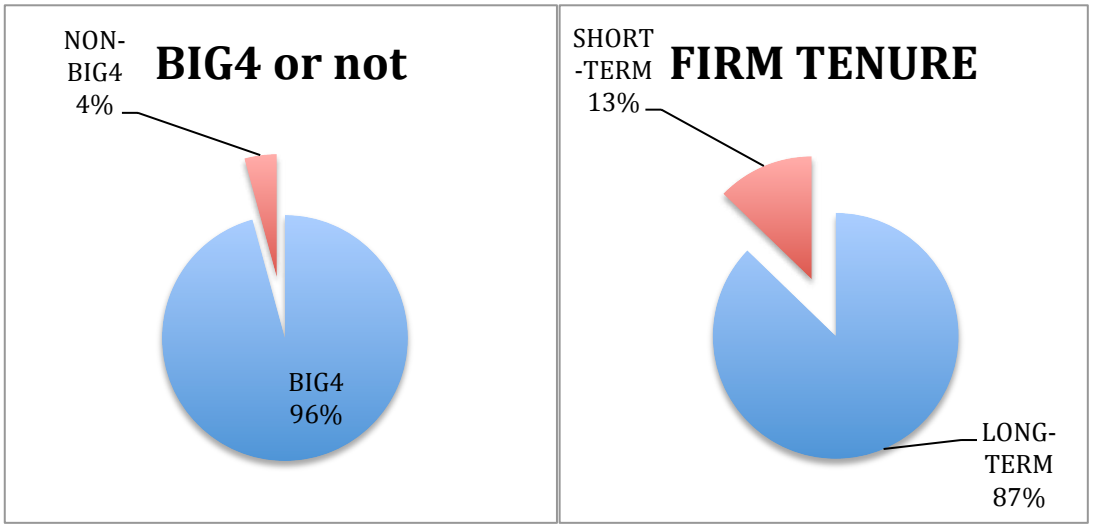
2008

The diagram 4.4: The summary of the variables in 2008

stats	mda2008	da2008	size2008	lev~2008	lnaf2008	lnn~2008	cfo2008
mean	-.0264715	-.026469	7.592847	.7212963	.9243733	.4238631	.1474658
sd	.0756802	.0756796	2.794341	.3812672	1.676998	1.601972	.120173
cv	-2.858937	-2.859176	.3680228	.5285861	1.814199	3.779456	.8149211
min	-.2591978	-.2591965	0	0	-1.514128	-2.216407	-.0066043
max	.1439409	.14394	12.44149	1.225743	8.0427	6.648984	.4639903

In 2008, compared with other variables, the variable of LNNAF had a relatively higher coefficient of variation. Thus, the extreme values might be more likely occurring within the data set of LNNAF. The following diagrams will summary the BIG4 and FT.

The diagram 4.5: BIG4 and FT in 2008



In 2008, the percentage of firms that were audited by Big 4 audit firms reached to 96%. This might imply that FTSE 100 preferred to be audited by Big 4 audit firms rather than by non-Big 4 audit firms. The

reason might be that the Big 4 audit firms, which have higher reputation compared with other audit firms, can provide higher-quality audit (Chang et al. 2009). At the same time, the percentages of long audit firm tenure were increasing to 87% from 79%. This might contribute to increasing the degree of monopoly for the audit market of FTSE 100.

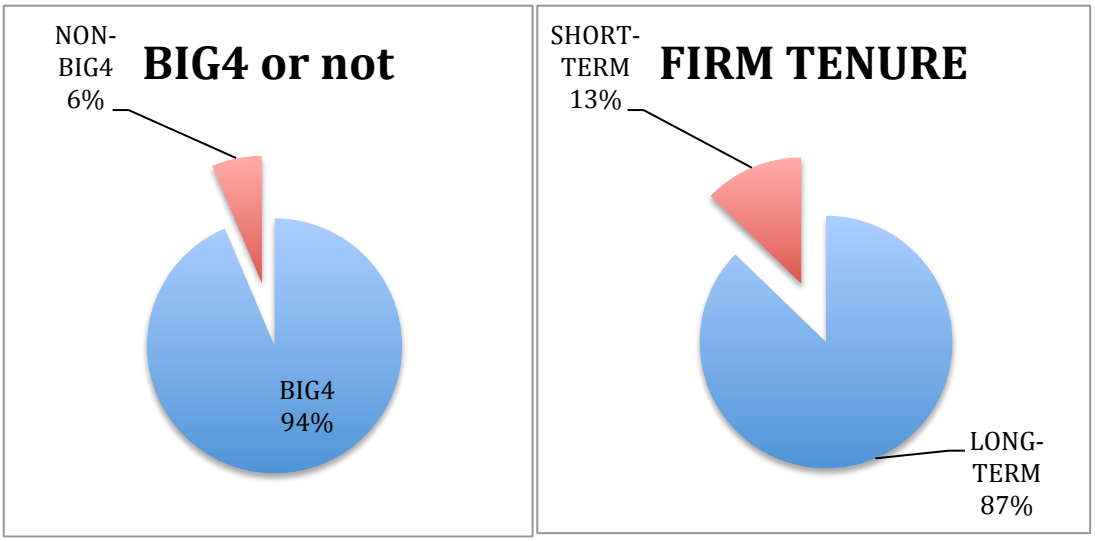
2009

The diagram 4.6: The summary of the variables in 2009

stats	mda2009	da2009	size2009	lev~2009	lnaf2009	lnn~2009	cfo2009
mean	-.0468198	-.0468192	7.540757	.5161678	.9128701	.2152321	.1172984
sd	.0700688	.0700681	2.743611	.2405065	1.609891	1.771481	.0860058
cv	-1.496564	-1.49657	.3638376	.4659463	1.763549	8.230561	.7332222
min	-.3472497	-.3472477	0	0	-1.6874	-5.809143	0
max	.0617591	.061761	11.90608	.880608	7.709308	5.225747	.4690096

During the year of 2009, there was a higher coefficient of variation for the variable of LNNAF, compared with other variables. It means that the degree of the deviation for the data set of LNNAF. That is to say, the extreme values are more likely occurring within the data set of LNNAF, and this may negatively affect the accuracy of regression models.

The diagram 4.7: BIG4 and FT in 2009



In 2009, the percentage of firms that were audited by Big 4 audit firms decreased to 94% from 96%. Even though the percentage was decreased by 2%, the Big 4 audit firms still occupied a monopoly for the audit market of FTSE 100. The percentages of long audit firm tenure were 87% that was the same to the percentage of long audit firm tenure in last year. The high degree of monopoly and high percentage of long audit firm tenure might have a negative influence on independence of auditors. Further, this might reduce the audit quality.

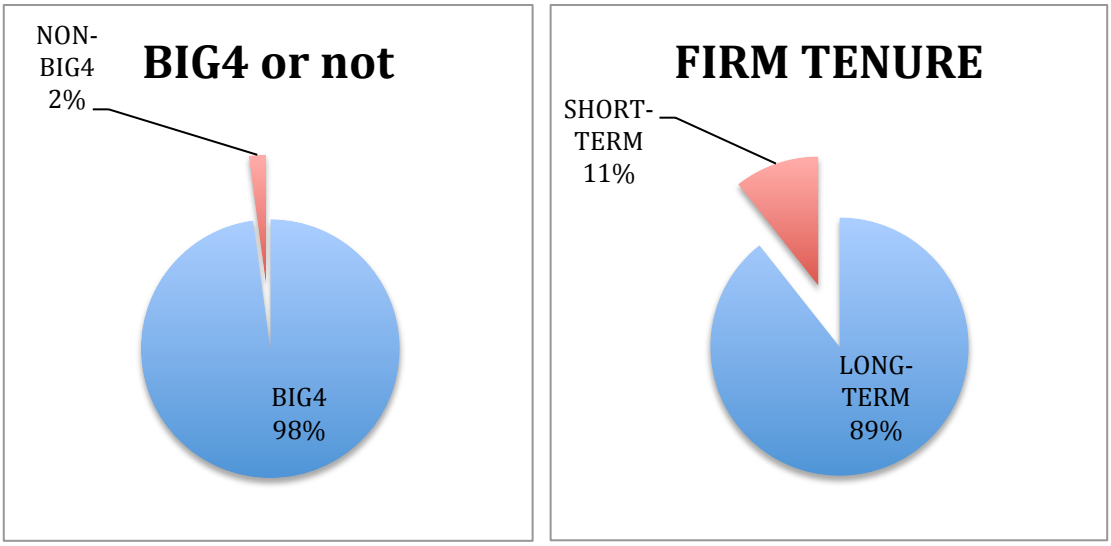
2010

The diagram 4.8: The summary of the variables in 2010

stats	mda2010	da2010	size2010	lev~2010	lnaf2010	lnn~2010	cfo2010
mean	.0033462	.0033457	7.910696	.6125168	.7503553	.048837	.1514551
sd	.1216188	.1216179	2.584292	.2586446	1.262537	1.229209	.1040626
cv	36.34512	36.35041	.3266833	.4222654	1.682585	25.16961	.687085
min	-.2127028	-.2127006	0	0	-1.660731	-2.748872	0
max	.5995692	.5995641	12.39472	1.438525	3.526361	3.367296	.5286797

Within the year of 2010, the coefficients of variation for the variable of MDA, DA and LNNAF were 36.345, 36.350 and 25.170 respectively; however, the coefficients of variation for other variables were less 2.000. The higher coefficients of variation for the variable of MDA, DA and LNNAF may increase the possibility of extreme values that may contribute to increasing the possibility of the unexpected regression results.

The diagram 4.9: BIG4 and FT in 2010



During the year of 2010, the percentages of firms that were audited by Big 4 audit firms were increased to 98% from 94%. Besides more and more firms had a long relationship with their auditors from 2009 to 2010. These might imply that it was difficult to change the high audit market concentration of FTSE 100. The high concentration of audit market might result in low-quality audit.

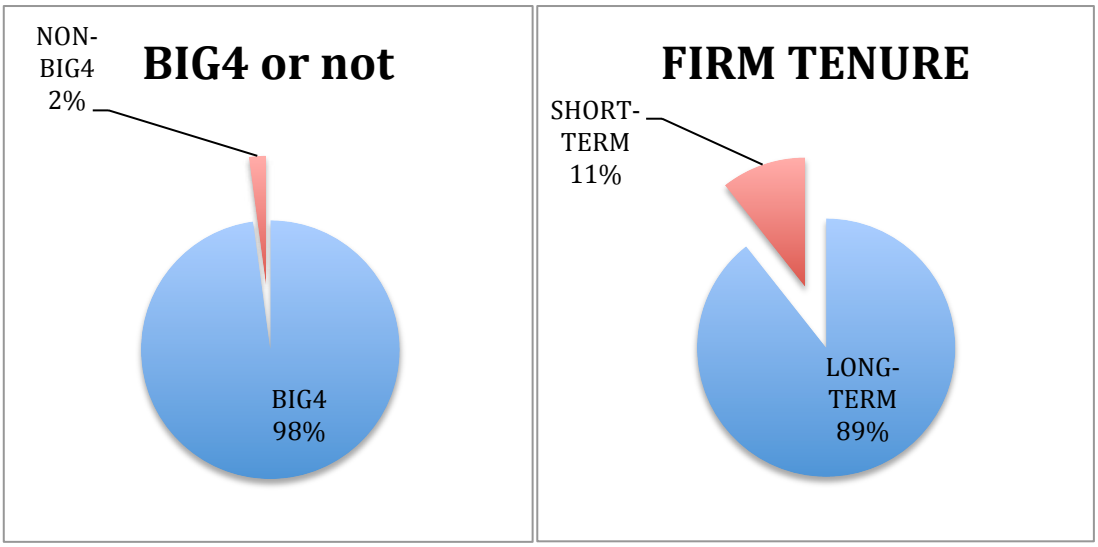
2011

The diagram 4.10: The summary of the variables in 2011

stats	mda2011	da2011	size2011	lev~2011	lnaf2011	lnn~2011	cfo2011
mean	.0684221	-.0319246	8.251437	.6093178	.8147688	.1185358	.1496081
sd	.1352562	.0545914	2.295487	.2686654	1.237571	1.326358	.1112985
cv	1.976791	-1.710007	.2781924	.4409282	1.518923	11.18952	.7439337
min	-.1381371	-.2331869	0	0	-1.80181	-3.912023	0
max	.5414503	.1074562	12.64995	1.326702	3.401197	3.713572	.6042107

In 2011, the coefficient of variation for the variable of LNNAF was 11.190; however, the absolute value of coefficients of variation for MDA, DA, SIZE, LEVERAGE, LNAF, and CFO were only 1.977, 1.710, 0.2782, 0.441, 1.519 and 0.744 respectively. This presented that LNNAF had a higher coefficient of variation, compared with other variables. It might illustrate that the degree of deviation for the data set of LNNAF was relatively higher compared with the degree of deviation for other variables.

The diagram 4.11: BIG4 and FT in 2011



From 2010 to 2011, there was no change on the percentage of firms that were audited by Big 4 audit firms and the percentage of long audit firm tenure. This supported that the tendency of monopoly for the audit market of FTSE 100 was stable. This might negatively affect the independence and objectivity of auditors.

The overall

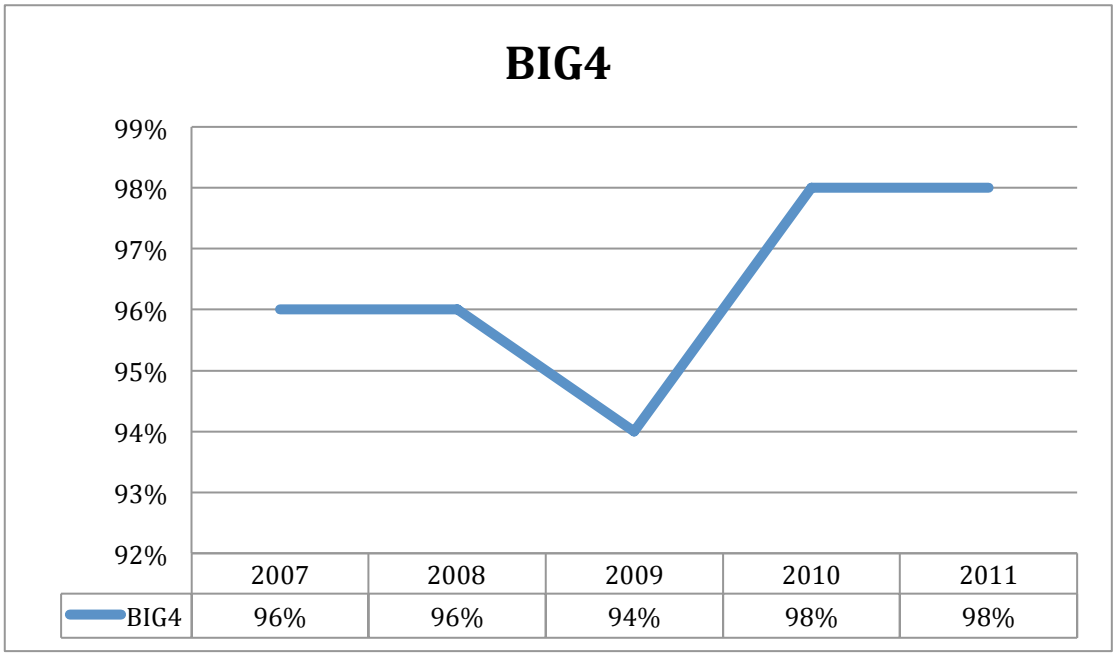
After discussing the characteristics of the observed data from 2007 to 2011 separately, the section will describe the overall characteristics of the observed data over the five years. The number of observation is increasing to 235 from 47. It is significant to understand the change of the observed data during the period of the financial crisis. The following diagram summarises characteristics of these variables from 2007 to 2011.

The diagram 4.12: The summary of the variables over the 5 years

stats	mda	da	size	leverage	lnaf	lnnaf	cfo
mean	-.0005637	-.0206332	7.704876	.6203493	.8066962	.1991014	.1361249
sd	.1090388	.0878414	2.746615	.3207366	1.403271	1.440067	.1047374
cv	-193.4486	-4.25729	.3564776	.5170259	1.739529	7.232831	.7694213
min	-.3472497	-.3472477	0	0	-1.80181	-5.809143	-.0591517
max	.5995692	.5995641	13.75406	2.18139	8.0427	6.648984	.6042107

From the above diagram, the coefficient of variation for MDA is the highest (its absolute value of the coefficient of variation is 193.449) compared with other coefficients of variation for other variables. Therefore, it may be vital to consider whether the regression models whose dependent variable is MDA are meaningful or not.

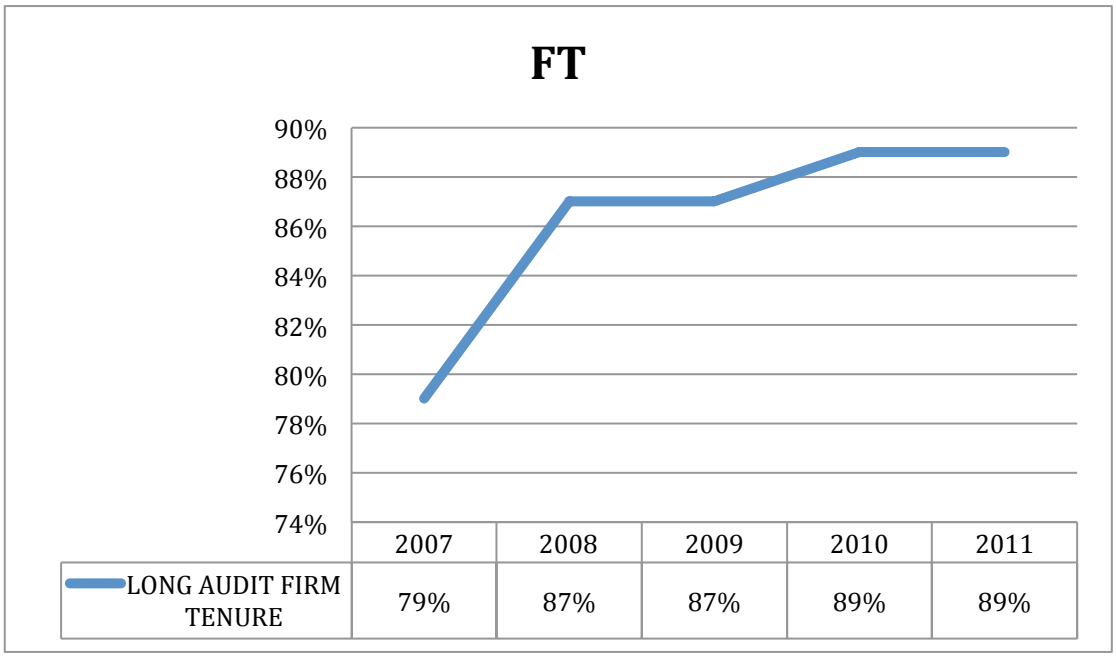
The diagram 4.13: The trend chart of BIG4 from 2007 to 2011



The percentage of firms, which are audited by Big 4 audit firms, is

gradually increasing to 98% from 2007 to 2011. It is worth noting that the percentage was going down to 94% in 2009. It might imply that the firm preferred to having a financial statement that could present a good financial results rather than obtaining a high-quality audit during the period of financial crisis. The reason may be that Big 4 audit firms are less allowing the occurrence of window dressed

The diagram 4.14: The trend chart of FT from 2007 to 2011



From 2007 to 2011, more and more firms had a long-term cooperative relationship with their audit firms. It may imply that FTSE 100 believes that the Big 4 audit firms have higher audit capabilities. The high audit capabilities may help the firm survive during the financial crisis, because it may assist the investors to find financial problems as soon as possible. Both diagram 13 and diagram 14 reveal

that the audit market of FTSE 100 has high concentration. The FTSE 100 is almost audited by Big 4 audit firms, and there is a long-term cooperative relationship between FTSE 100 and their audit firms. All of these may cause the decline of audit quality, even though the Big 4 audit firms normally can bring a higher-quality audit compared with other audit firms.

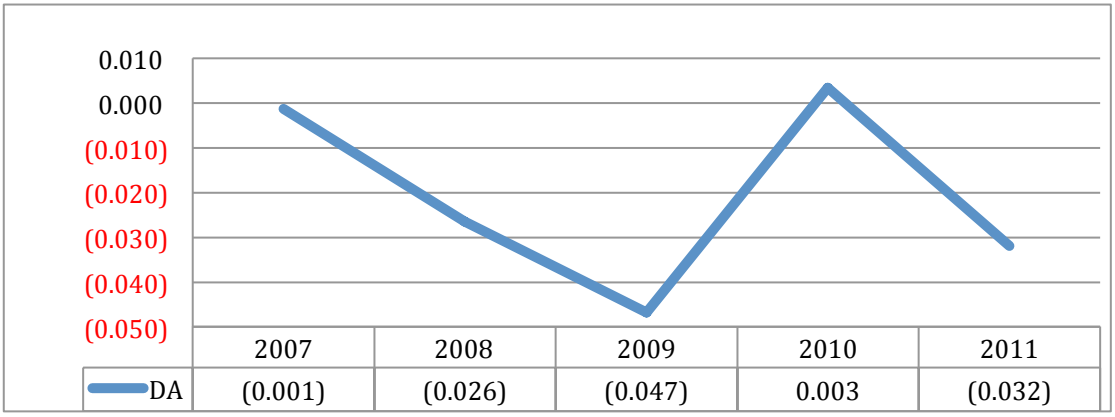
4.2 The chart analysis

After understanding the characteristics of variables (including the DA, MDA, SIZE, LEVERAGE LNAF, LNNAF, BIG4, FT, CFO), the chart analysis will be used to investigate the relationship between DA (or MDA) and other variables separately. The analysis is simple and easy to understand the relationship between variables. Firstly, the trend chart of DA (or MDA) will be used to compare with the trend chart of other variables separately. After the comparison, the relationship between DA and other variables can be obtained. Lastly, the section will summarise and discuss the relationship between DA (or MDA) and other variables based on the chart analysis.

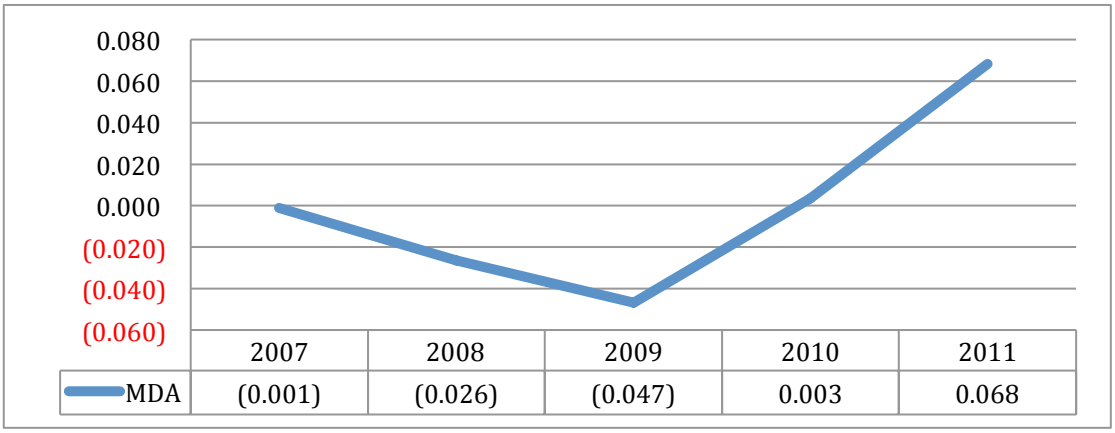
There are 47 firms that are included in the sample each year. It is difficult to consider which company's data is selected to form the trend charts of SIZE, LEVERAGE, LNAF, LNNAF and CFO. Normally, the mean can reflect the central tendency of data. Thus, the each year mean of SIZE, LEVERAGE, LNAF, LNNAF and CFO can be used to obtain these trend charts from 2007 to 2011, which is appropriate. The following will represent the relationship between DA (or MDA) and SIZE through the comparison between the trend chart of DA (or MDA) and SIZE.

SIZE

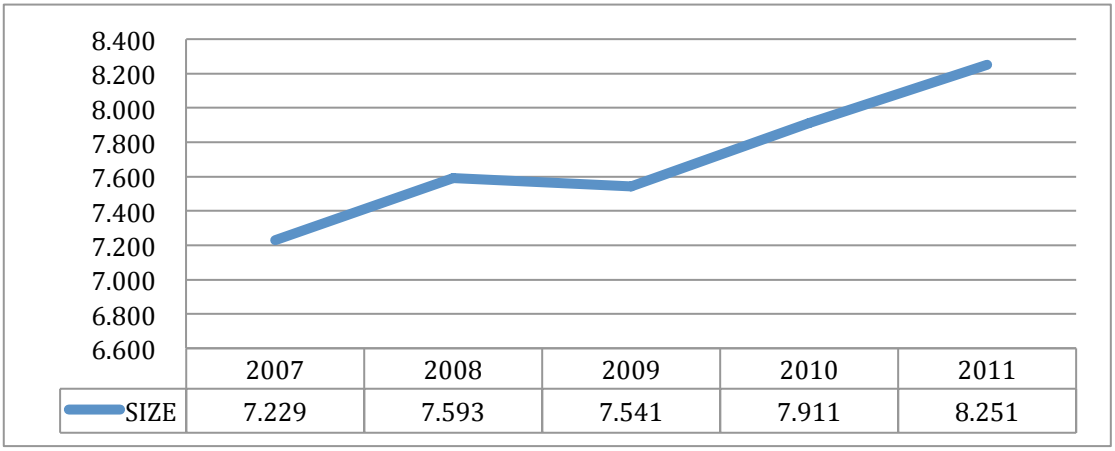
The diagram 4.15: The trend chart of DA from 2007 to 2011



The diagram 4.16: The trend chart of MDA from 2007 to 2011



The diagram 4.17: The trend chart of SIZE from 2007 to 2011



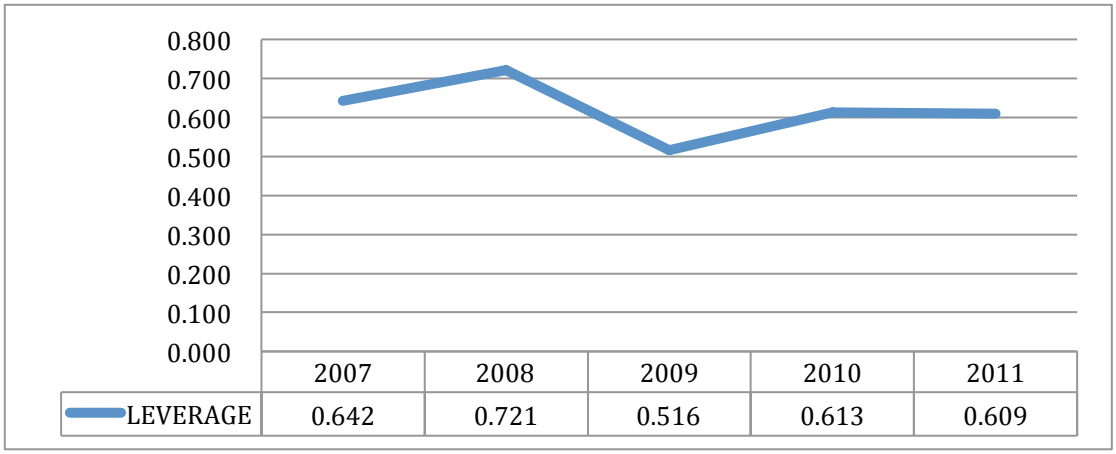
After comparing the trend chart of DA and SIZE, there are some findings. Within the period of 2007 to 2008 and the period of 2010 to 2011, there is a negative relationship between DA and SIZE. This implies that the audit client size increases along with the increase in audit quality. When the tendency of DA is decreasing, the value of SIZE is almost not changing from 2008 to 2009. This may mean that the variable of SIZE may not affect the audit quality from 2008 to 2009. It may also represent that the decline of economic condition can negatively affect the audit quality. Between 2009 and 2010, the DA is positively related to the SIZE. This may represent that the audit quality is negatively related to the audit client size.

When the modified Jones model is used to measure the audit quality, there is a different finding that can be discovered by comparison between the trend chart of MDA and SIZE. From 2010 to 2011, the MDA is positively related to the SIZE; however, the DA is negatively related to the SIZE. Therefore, the audit quality can be negatively affected by the audit client size, when the modified Jones model is used to calculate discretionary accruals. This may imply that the method of calculating discretionary accruals can have an influence on relationship between audit quality and audit client size. The following will analyse the relationship between DA (or MDA) and LEVERAGE

through the comparison between the trend chart of DA (or MDA) and LEVERAGE.

LEVERAGE

The diagram 4.18: The trend chart of LEVERAGE from 2007 to 2011



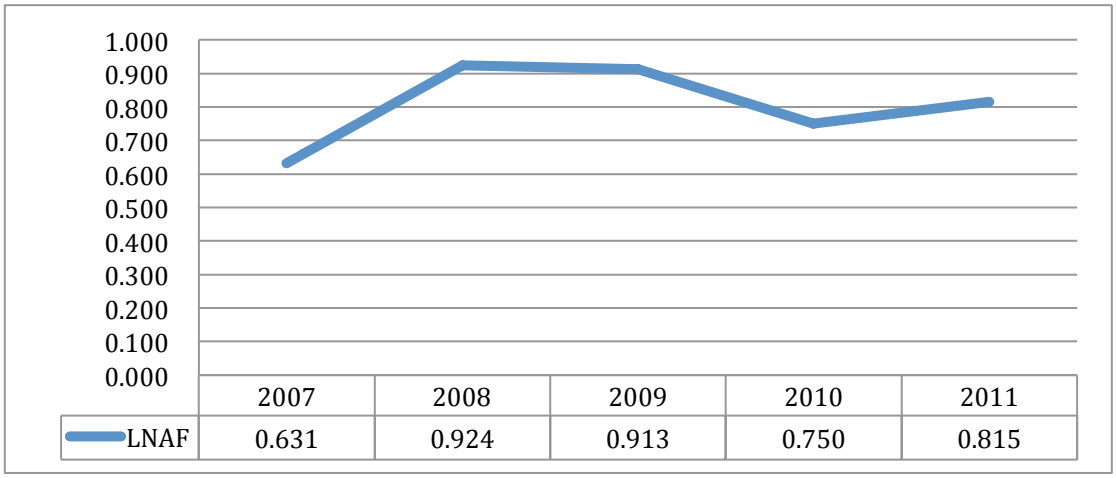
During the period of 2007 to 2011, the leverage is fluctuant. This may imply that the financing strategy is always changing over the period, because the firm may face many financial problems during the financial crisis. Compared the trend chart of DA and LEVERAGE, there is a positive relationship between discretionary accruals and leverage from 2008 to 2011. However, during the period of 2007 to 2008, the leverage is negatively related to the discretionary accruals. This revels that the leverage increases along with the increase in audit quality from 2007 to 2008, and after 2008 the relationship between audit quality and leverage is different.

When the trend charts of MDA and LEVERAGE are considered together,

the discretionary accruals are negatively related to the leverage from 2007 to 2008 and 2010 to 2011. From 2008 to 2010, there is a positive relationship between discretionary accruals and leverage. It shows that there is a positive relationship between audit quality and leverage during the period of 2007 to 2008 and 2010 to 2011, and there is the negative relationship from 2008 to 2010. This may illustrate that when the financial crisis is aggravating, the audit quality can be negatively influenced by high leverage. The following will discuss the relationship between DA (or MDA) and LNAF through the comparison between the trend chart of DA (or MDA) and LNAF.

LNAF

The diagram 4.19: The trend chart of LNAF from 2007 to 2011



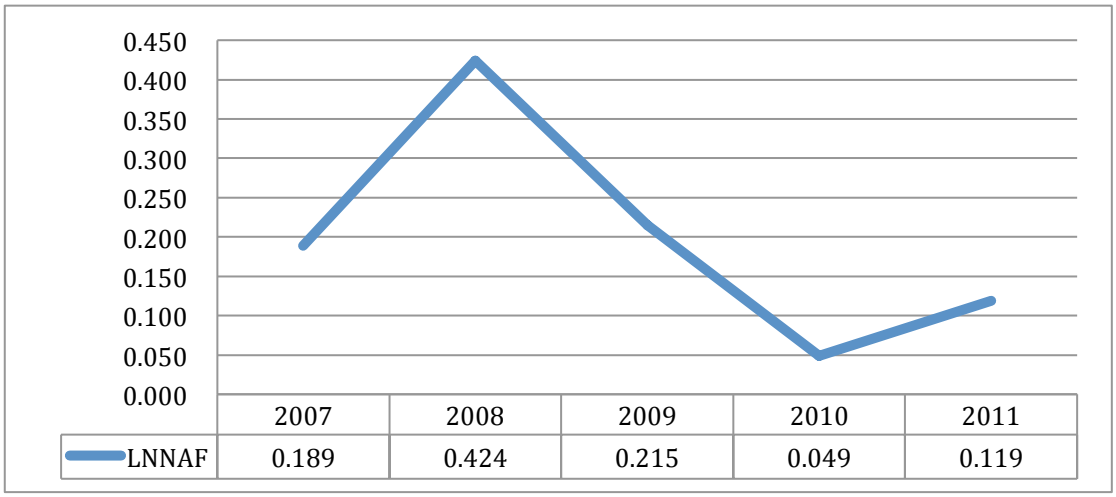
By comparison between the trend chart of DA and LNAF, the discretionary accruals are normally negatively related to the audit fees. This reveals that the audit fees can positively affected the audit

quality. It is worth noting that even though the audit fees do not change from 2008 to 2009, the audit quality is gradually increasing. This may because that the factor of audit fees is not a major factor that has an influence on audit quality in the early financial crisis.

When the discretionary accruals can be calculated by the modified Jones method, it is positively related to the audit fees. That is to say that audit quality is decreasing accompanied by the increase in audit fees. The result may because that the coefficient of variation of MDA is much higher than that of DA. The following will discuss the relationship between DA (or MDA) and LNNAF through the comparison between the trend chart of DA (or MDA) and LNNAF.

LNNAF

The diagram 4.20: The trend chart of LNNAF from 2007 to 2011



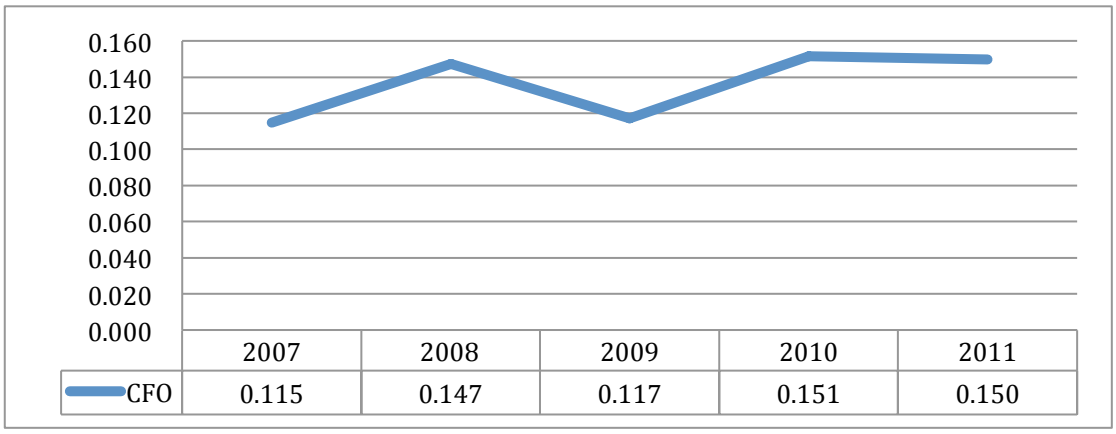
Apart from the period of 2008 to 2009, the relatinsihp between DA

and LNNAF is negative within other periods. That is to say that the audit quality is almost positively related to the non-audit servive fees from 2007 to 2011 (excluding the period of 2008 to 2009).

Through the comparison between the trend charts of MDA and LNNAF, the relationship between MDA and LNNAF is always floating from 2007 to 2011. This may imply that it is difficult to ensure the relationship between audit quality and non-audit service fees during the period of financial crisis. Therefore, when the factor of non-audit service fees is considered how it affects the audit quality, it also requires considering other factors (such as audit client size, leverage and Big 4). By comparison between the trend charts of DA (or MDA) and LNNAF, there will be some findings between the relationship between DA (or MDA) and LNNAF in the following section.

CFO

The diagram 4.21: The trend chart of CFO from 2007 to 2011

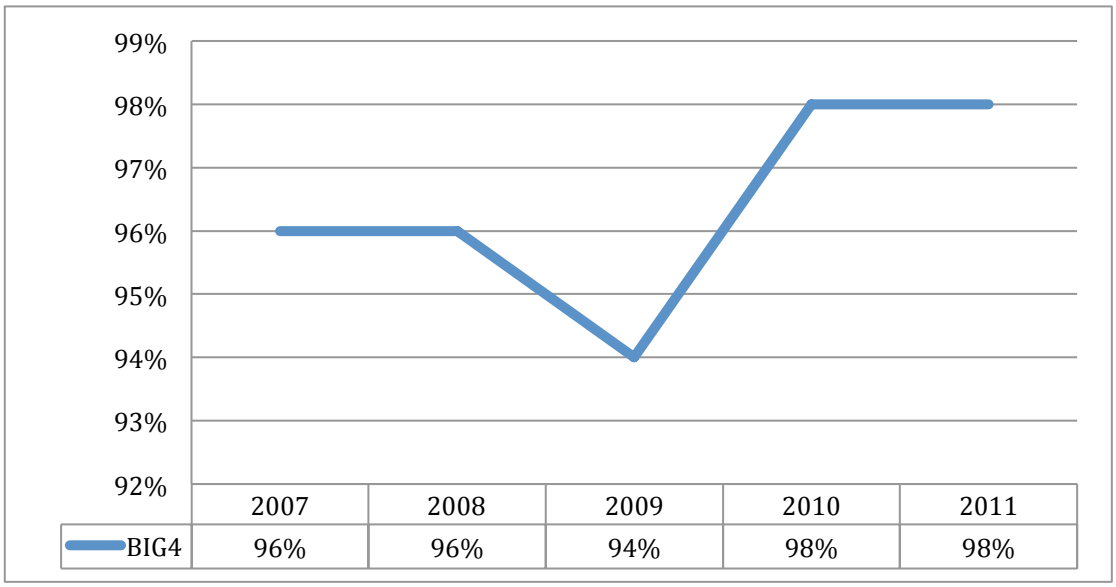


Based on the Jones model, the discretionary accruals are normally positively related to the cash flows from operations from 2008 to 2011. Thus the audit quality is negatively related to the cash flow from operation. The high level of cash flows from operations may represent that the mangers have a high influence on cash flows by accounting discretion, and the auditors may be more likely to allow high level of window dressed earnings within the firm. This supports the negative relationship between the audit quality and cash flows from operations.

Based on the modified model, it is difficult to ensure the relationship between audit quality and cash flows from operations. Because the relationship between discretionary accruals and cash flows from operations is always changing from 2007 to 2011. This finding may suggest that the high degree of deviation for the set of data about MDA should be considered. The following will analyse the relationship between DA (or MDA) and BIG4 by the comparison between the trend charts of DA (or MDA) and BIG4.

BIG4

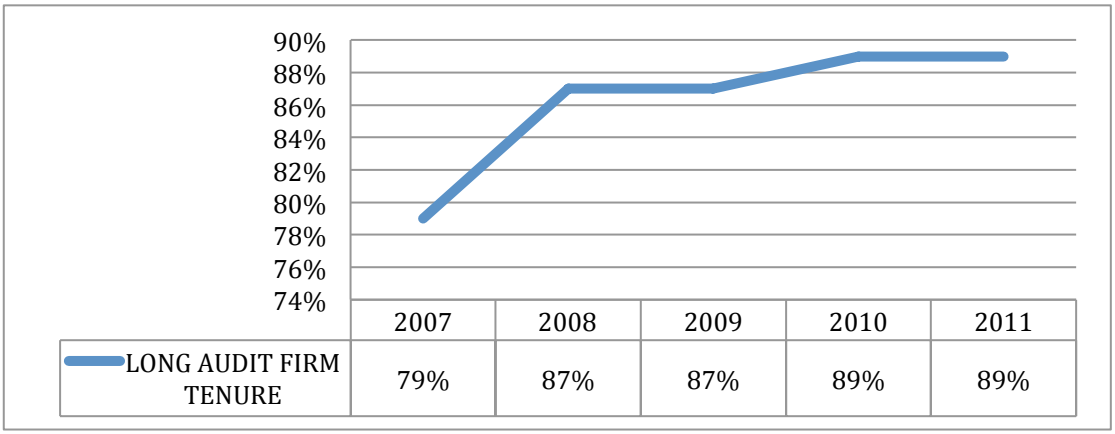
The diagram 4.22: The trend chart of BIG4 from 2007 to 2011



within the section, the BIG4 represents that the percentage of firms that are audited by Big 4 audit firms. During the period of financial crisis, the audit market concentration of Big 4 is very high. When the marekt concentration is high, the tendency of discretioanry accruals that are calcualted by the Jones model and modified Jones model are not stable from 2007 to 2011. Hence, the factor of BIG4 may be not related to the audit quality.

FT

The diagram 4.23: The trend chart of FT from 2007 to 2011



For the section, the FT represents the percentage of long audit firm tenure. The above diagram shows that the percentage of long audit firm tenure is gradually increasing from 2007 to 2011. It can imply that more and more firms have a long-term cooperative relationship with their audit firms. From the above diagram 15 and 16, the tendency of DA and MDA does not disciplinary over the period of 2007 to 2011. Therefore, there may be no relationship between the audit quality and audit firm tenure. The following section will summarise results based on the chart analysis.

Summary of results

In this section, it will summarise results from the above analysis. The diagram 24 shows the summary of results based on the chart analysis. Based on different methods that are used to calculate the

discretionary accruals, the different results about the relationship between discretionary accruals and other variables can be obtained. The following diagram represents the summary of results.

The diagram 4.24: The summary of results based on the chart analysis

	DA	MDA
SIZE	Positive/Negative	Positive/Negative
LEVERAGE	Positive/Negative	Positive/Negative
LNAF	Negative	Positive
LNNAF	Negative	Insignificant
BIG4	Insignificant	Insignificant
FT	Insignificant	Insignificant
CFO	Positive	Insignificant

Even though the chart analysis can help people intuitively know the relationship between DA (or MDA) and its variables, it does not consider the mutual influence between the variables. The regression analysis considers the mutual influence between the variables. Therefore, the results from regression analysis can be more accurate compared with the results from the chart analysis. The following section will discuss the regression results.

4.3 Regression analysis

To regression models, the data analysis and chart analysis contribute to understanding the characteristics of independent and dependent variables deeply. The following will discuss the regression results from 2007 to 2011 separately, and then it will analyse the overall regression that considers 5 years' data. For the dependent variable (audit quality), two models that are Jones model and modified Jones model will be used to calculate the discretionary accruals, which can be taken as a proxy for audit quality. For the regression model, the audit quality is dependent variable, and the independent variables SIZE, LEVERAGE LNAF, LNNAF, BIG4, FT and CFO. The following diagrams (from diagram 25 to diagram 29) represent the regression results from 2007 and 2011.

2007

The diagram 4.25: The regression results in 2007

	DA	MDA
SIZE	Insignificant	Insignificant
LEVERAGE	Positive	Positive
LNAF	Insignificant	Insignificant
LNNAF	Insignificant	Insignificant
BIG4	Insignificant	Insignificant
FT	Insignificant	Insignificant

CFO	Insignificant	Insignificant

Based on the STATA result (see the Appendix 1), the discretionary accruals are positively related to the level of leverage in 2007. After looking at the STATA result, only the p value for the LEVERAGE is less than 0.05. Therefore, only the factor of LEVERAGE is significant for discretionary accruals. This implies that there is a negative relationship between the audit quality and the level of leverage in 2007.

2008

The diagram 4.26: The regression results in 2008

	DA	MDA
SIZE	Insignificant	Insignificant
LEVERAGE	Insignificant	Insignificant
LNAF	Insignificant	Insignificant
LNNAF	Insignificant	Insignificant
BIG4	Insignificant	Insignificant
FT	Insignificant	Insignificant
CFO	Insignificant	Insignificant

Based on the STATA result (see the Appendix 2), there is no relationship between the discretionary accruals and its independent variables. That is to say, there is no evident to support that the audit quality can be affected by these seven independent variables in 2008.

2009

The diagram 4.27: The regression results in 2009

	DA	MDA
SIZE	Insignificant	Insignificant
LEVERAGE	Insignificant	Insignificant
LNAF	Insignificant	Insignificant
LNNAF	Insignificant	Insignificant
BIG4	Insignificant	Insignificant
FT	Insignificant	Insignificant
CFO	Negative	Negative

After analysing the STATA result (see the Appendix 3), CFO has a negative relationship with the discretionary accruals. Because only the p value for the CFO is less than 0.05, which represents the factor of CFO is significant. This illustrates that the audit quality increases along with the increase in CFO in 2009.

2010

The diagram 4.28: The regression results in 2010

	DA	MDA
SIZE	Insignificant	Insignificant
LEVERAGE	Insignificant	Insignificant
LNAF	Insignificant	Insignificant
LNNAF	Insignificant	Insignificant
BIG4	Insignificant	Insignificant
FT	Insignificant	Insignificant

CFO	Insignificant	Insignificant

After considering the STATA result (see the Appendix 4), it shows that the audit quality is not associated with the seven independent variables in 2010, because all of the p values for these independent variables are more than 0.05.

2011

The diagram 4.29: The regression results in 2011

	DA	MDA
SIZE	Insignificant	Positive
LEVERAGE	Insignificant	Insignificant
LNAF	Insignificant	Insignificant
LNNAF	Insignificant	Insignificant
BIG4	Insignificant	Insignificant
FT	Insignificant	Insignificant
CFO	Insignificant	Insignificant

When the discretionary accruals are calculated by Jones model, it does not have a relationship with its independent variables. However, when the discretionary accruals are calculated by modified Jones model, it is positively associated with SIZE. That is to say that audit quality is negatively related to the audit client size (see the Appendix 5). The above regression results (shown in diagram 29) may imply that the method that is used to measure the audit quality can affect the regression results. The following diagram 20 will show results of

regression that considers all of the data from 2007 to 2011.

The overall

The diagram 4.30: The regression results over the 5 years

	DA	MDA
SIZE	Insignificant	Insignificant
LEVERAGE	Insignificant	Insignificant
LNAF	Insignificant	Insignificant
LNNAF	Insignificant	Insignificant
BIG4	Insignificant	Insignificant
FT	Insignificant	Insignificant
CFO	Negative	Insignificant

Based on the STATA result (see the Appendix 6), if the Jones model is used to calculate the discretionary accruals, there will be a negative association between discretionary accruals and CFO. However, there is no relationship between discretionary accruals and CFO, if the modified Jones model is used to compute the discretionary accruals that are negatively related to the audit quality. The following section will summarise the overall results based on the above regression analysis.

Summary of results

The diagram 4.31: The overall results based on regression analysis

	DA	MDA
SIZE	Insignificant	Positive
LEVERAGE	Positive	Positive
LNAF	Insignificant	Insignificant
LNNAF	Insignificant	Insignificant
BIG4	Insignificant	Insignificant
FT	Insignificant	Insignificant
CFO	Negative	Negative

The above diagram concludes the overall results based on the regression analysis. It is significant to consider the correlation between independent variables to avoid the multicollinearity. If the correlation between independent variables is high, this will negatively affects the accuracy of the expected regression model. For example, the estimated coefficients cannot represent appropriate association between dependent and independent variables. The following section will analyse the correlation between independent variables.

4.4 The correlation between independent variables

In this section, it aims to investigate the correlation between independent variables. Normally, if the coefficient of correlation between independent variables is over 0.75, this can be considered as high correlation between them. High coefficient of correlation can lead to the multicollinearity. The following diagram just shows these coefficients of correlation between independent variables that are around 0.75.

The diagram 4.32: The correlation between independent variables

	LNAF2007[1]	LNAF2008	LNAF2011	LNAF[2]
LNNAF2007[3]	0.7302			
LNNAF2008		0.8652		
LNAF2011			0.7515	
LNNAF				0.7409

From the above diagram, the coefficients of the correlation between LNAF and LNNAF are high. This implies that the correlation between LNAF and LNNAF is relatively high. Thus the multicollinearity can be caused by the high correlation between them. The multicollinearity can result in a low R-squared value. The R-squared value can be considered as an indicator that represents the goodness of fit for the

[1] LNAF2007, LNAF2008, LNAF2011 mean the variable of LNAF in 2007, 2008 and 2011 respectively
[2] LNAF and LNNAF mean the variable of LNAF and LNNAF over the 5 years
[3] LNNAF2007, LNNAF2008, LNNAF2011 mean the variable of LNNAF in 2007, 2008, 2011 respectivley

trend line. The higher the value is, the higher the goodness of fit is. If the goodness of fit is higher, the trend line will be more reliable. Based on the STATA result (see the Appendix 1, 2, 5 and 6), the R-squared values are relatively low. The low R-squared value, which shows the low goodness of fit, may cause that the regression results are not appropriate. After considering the correlation between independent variables, the following will discuss the above results that are from the chart analysis and regression analysis, and it will also combine these actual results and expected results.

4.5 Discussion

In this section, it will firstly summarise the expected and actual results about the relationship between audit quality and its factors (including the audit client size, capital structure, audit fees, non-audit service fees, Big 4, firm tenure and cash from operations). The actual results are based on the regression and chart analysis. And then the expected results will be compared with the actual results. After comparison, it will discuss the same and different between expected and actual results. Finally, there will be some new findings that are discovered by the report. The following diagram will illustrate the expected results and actual results.

The diagram 4.33: The summary of the expected results and actual results

Variables	Expected	The regression analysis		The chart analysis	
		AQ (DA)[4]	AQ (MDA)[5]	AQ (DA)	AQ (MDA)
SIZE	-	X	-	+/-	+/-
LEVERAGE	+/-	-	-	+/-	+/-
LNAF	-	X	X	-	+
LNNAF	-	X	X	-	X

[4] AQ (DA) means the discretionary accruals based on the Jones model as the proxy for audit quality
[5] AQ (MDA) means the discretionary accruals based on the modified Jones model as the proxy for audit quality

BIG4	X	X	X	X	X
FT	+	X	X	X	X
CFO	+	+	+	+	X

('+' means the positive relationship; '-' means the negative relationship; 'X' means there is no relationship between two variables)

The comparison

This section will compare the expected results and actual results that are based on the regression and chart analysis. The following diagram will express the results after comparison between the expected and actual results.

The diagram 4.34: The results by the comparison

Variables	The regression analysis		The chart analysis	
	AQ (DA)	AQ (MDA)	AQ (DA)	AQ (MDA)
SIZE	D	S	?	?
LEVERAGE	?	?	S	S
LNAF	D	D	S	D
LNNAF	D	D	S	D
BIG4	S	S	S	S
FT	D	D	D	D
CFO	S	S	S	D

('D' means the actual result is the same to the expected result; 'S'

means the actual result is different from the expected result; '?' means that the actual result may be the same to the expected or may be different from the expected result)

After comparison between the expected findings and the actual findings based on the regression analysis, there may be a major reason for the same findings between expected and actual results. The expected results are based on the previous literatures. The estimated OLS, which are normally used by previous researchers, is selected by the report as the methodology. The same findings may be as a result of the same methodology that is used to investigate the relationship between audit quality and its factors.

There are some reasons that may explain why the expected findings and the actual findings are different. Firstly, the audit quality maybe not has a linear relation with the seven independent variables. However, the report assumes a linear relation. Secondly, the period of collecting financial data is different, so that the results maybe different. Because the financial market situation, within the different period, is different. Thirdly, method that is used to measure variables is different. For example, the audit client size can be measured by the natural logarithm of total revenue, it can also be calculated by the

natural logarithm of total assets. Finally, the sample size of the report is small, thus it is difficult offset the influence of abnormal financial data.

New findings

After the above analysis, there are two major findings. Firstly, the economic conditions may affect the audit quality. The report aims to investigate the relationship between audit quality and its factors during the financial crisis. After analysis, it can find that the relationship between audit quality and its factors is different for every year during the period of 2007 to 2011. This may support that the economic conditions (such as the period of financial crisis) can affect the audit quality. Lastly, the method that can be used to measure the discretionary accruals may have an influence on the relationship between audit quality and its factors. Because the relationship between audit quality and its factors is different, when the Jones model and modified Jones model are separately used to measure the audit quality.

4.6 Limitations of the study

There are some limitations for the study. Firstly, there are inherent limitations for the use of a sample. For example, the FTSE 100 is

selected as a sample for the report that aims to investigate the relationship between audit quality and its factors during the financial crisis. If the report considers a wider sample, the different findings may be found. Secondly, the study uses the discretionary accruals as a proxy for audit quality. In addition to the abnormal accruals, the earnings related to cash flow can also be used to measure the audit quality (Burgstahler et al. 2004). Chung and Kallapur (2003) provide that the discretionary accruals can be used to measure the audit quality, which can be problematic. Lastly, the non-linear accruals model can be a better model to measure the audit quality than the linear model of Jones (Ball and Shivakumar, 2006).

Chapter 5 Conclusion

The report is going to explore whether the economic condition can affect the audit quality based on comparison of the relationship between audit quality and its factors from 2007 to 2011 separately. The following gives two recommendations for future research about the study. Lastly, it will conclude the conclusion.

5.1 The recommendation one for future research

It is worth noting that the R-squared value for the regression models is not high. This may remind that the other researchers require considering more variables that can affect the audit quality to optimise the regression models that are established by the report in future. Here the report recommends that the variable of auditor tenure and the seven variables that are mentioned in the report can be considered together to create a new regression model. Because the variable of auditor tenure is gradually being taken seriously.

After U.S. accepted the SOX, there were many other countries following the mandatory audit partner rotation, such as the European Union, United Kingdom and so on (Manry et al. 2003). Sarbanes-Oxley Act (SOX) changed the audit partner rotation from seven years to five years. The Security Exchange Commission (SEC)

also increased the cooling-off period from two years to five years (Daugherty et al. 2013). The provision of mandatory audit partner rotation could take a new eye on the client risk engagement issues, thus it would increase the audit independence. However, it could decrease the client-specific knowledge. Even though the relocation caused from the partner rotation is an issue, the major problem as a result of the partner rotation was lack of client-specific knowledge. Generally, partners should take 2.5 years to completely understand a client and to take an effective audit reporting.

The U.S. Senate began to consider that whether audit firm rotation could improve audit quality after the Enron financial scandal and the failure of Andersen. The SOX [2002] was passed and the Congress indicated that there were potential benefits for a financial issuer when the issuer uses a new auditor "with fresh and skeptical eyes" (U.S. Senate, 2002). Within the report of Chi et al. (2005), the audit quality was measured by absolute and signed abnormal accruals and abnormal working capital accruals. They discovered that the companies who accepted the mandatory audit partner rotation could have higher audit quality compared with the companies who did not accept the mandatory audit partner in 2004. Nagy (2005) found that the discretionary was positively related to the audit firm tenure for

small companies, but the finding was pointed out under a turbulent period such as the Enron financial scandal and the failure of Andersen. Therefore, the finding may not be representative.

However, the shorter audit tenure could lead to lower audit quality. With longer audit firm tenure, the client can get a more reliable audited financial reporting (Ghosh and Moon, 2005). For example, the Public Oversight Board, the Commission on Auditors' Responsibilities and the National Commission found that audit failures are more likely occurring in the first two years of a client-audit firm relationship (AICPA, 2003). The report from Geiger and Raghunandan (2002) and Carcello and Nagy (2004) also found that the audit reporting failures were more likely appearing in the earlier years of the client-audit firm relationship. Besides the General Accounting Office (GAO) found that it would be difficult to predict the mandatory audit firm rotation's potential benefits that are improving auditor independence and audit quality, because there are additional costs and the misunderstanding from the new auditor (GAO, 2003).

Johnson et al. (2002) found that compared with the medium client-audit firm relationships, the financial reports' quality with the short client-audit firm relationships would be lower. Here the absolute

value of discretionary accruals was used as a measure of audit quality. Under the controlling for client size and engagement risk, Manry et al. (2003) suggested that there was a positive relationship between audit quality and partner tenure for small clients; however, there was no relationship between them for large clients. Their report focused on the individual audit partners rather than audit firms focused by the other reports. However, Daugherty et al. (2013) pointed out that mandatory audit partner rotation could bring an indirect and negative impact on audit quality. There was a negative relationship between audit quality and tenure (Mansi et al. 2004). It is worth noting that the capital structure should be considered.

All of the above provides an overview on the relationship between audit quality and auditor tenure. These support that the auditor tenure can have a significant influence on audit quality based on large number of previous literatures. Therefore, if the auditor tenure is considered in future, this may contribute to obtaining relative accurate findings about the relationship between audit quality and its factors. The report dose not considers the variable of auditor tenure, because there are large numbers of data about the auditor tenure that are not available from 2007 to 2011.

5.2 The recommendation two for future research

In previous studies, the discretionary accruals are normally considered as a proxy for the audit quality. The different people can have a different viewpoint on the definition of the audit quality. Therefore, it may be not appropriate to measure the audit quality by abnormal accruals. The audit quality can be influenced by the behaviour of the auditor. The behaviour of the human can be caused by the psychological factor. The subject of the report is to investigate the relationship between audit and its factors during the financial crisis. During the period of the financial crisis, the psychology of the auditors is changing. The change of the psychology can cause the change of the auditor's behaviour that can affect the audit quality. Therefore, the psychology factor can be considered in further study to investigate the relationship between the audit quality and its factors during the financial crisis.

The idea of behavioural finance helps the report to consider factors that affect audit quality from the viewpoint of psychology. Shefrin (2000) provides *"behavioural finance is the application of psychology to finance behaviour — the behaviour of practitioners."* In my opinion, the behavioural finance can be used to explain some behaviours that affect audit quality within the audit process. The behavioural finance

is normally related to cognitive biases, frame dependence bias, herding behaviour and prospect theory (Taffler et al. 2009; Muradoglu et al. 2008; Kaminsky and Reinhart, 1999; Tversky and Kahneman, 1979). The following will explain how behavioural finance affects audit quality based on cognitive biases and prospect theory.

Cognitive biases

Within an audit, the individual characteristics may generate some influence on audit quality. The cognitive biases normally affect the auditors' behaviour and judgments. First of all, some incentives have adverse influence on auditor judgments that can reduce audit quality, such as risk of client loss and fee pressure (Farmer et al. 1987; Houston, 1999; Blay, 2005 and Gramling, 1999). This behaviour may be caused by cognitive biases that cause negative change on psychology of auditors. And then, Taffler et al. (2009) provides that the people always make a decision relied on the heuristics or rules of thumb. This may contribute auditors to making more appropriate decisions on old clients than on new clients, because, auditors have much more specific knowledge and experience on old clients than on new clients. For example, Chen et al. (2009) show that professional skepticism is positively related to the audit quality. Besides, a

large number of specific knowledge can produce a high-quality auditor judgment, which contributes to improving audit quality (Bonner, 1990). Finally, the pressures from the audit firm can affect the auditor judgments, because these pressures may result in the change of auditors' psychology. For example, the pressures of time-budget may cause some behaviour to reduce audit quality (Knechel et al. 2013). For example, auditors may ignore some misstatements of financial reporting to meet the time-budget. The auditors' judgments are easily influenced by cognitive biases, because the circumstance is uncertain within the audit process and audit outcomes (Knechel et al. 2013).

Prospect theory

To finance, prospect theory describes that investors preferred to avoid loss rather than to maximise margin (Tversky and Kahneman, 1979). This may imply that people prefer to avoid risk. The psychology may cause the possibility that auditor overstates the audit risk. The behaviour may increase audit quality. This may because that if auditors overstate audit risk, they will spend more time and effort to audit the client's accounting system and financial reports.

In order to investigating the relationship between audit quality and its factors through the idea of behaviour finance, there will be requiring more effort to understand how to explain the behaviour that helps to improve the audit quality based on the behavioural finance.

5.3 Conclusion of the conclusion

In addition to the variable of Big 4 and firm tenure, the other variables can affect the audit quality based on the chart analysis. However, there are only three variables of audit client size, capital structure and cash from operations that have an influence on audit quality based on the regression analysis. The report obtains two main findings based on the sample that are collected from the FTSE 100 market. The first is the economic conditions may have an influence on the audit quality. The second is that the method that can be used to measure the discretionary accruals may affect the relationship between audit quality and its factors. The report contributes to increasing the research perspective to investigate the relationship between audit quality and its factors. The reason is that the factor of economic conditions are taken into account by the report, however, no study considers the economic conditions in prior studies.

Chapter 6: References

Aamir, S. and Farooq, U., (2011), 'Auditor client relationship and audit quality: the effects of long-term auditor client relationship on audit quality in SMEs', *Umea University,* Available from: http://umu.diva-portal.org/smash/get/diva2:426632/FULLTEXT01.pdf [viewed on 30/06/2013]

Abbott, L., Parker, S. and Peters, G. (2000), 'The effectiveness of blue ribbon committee recommendations in mitigating financial misstatements: An empirical study', Working paper, University of Memphis.

AICPA (2003), Audit Partner Issue Brief, Section IV.2. New York, NY: AICPA, Available from: http://www.aicpa.org/download/statelegis/Audit_Partner_Rotation.doc. [viewed on 21/08/2013]

APB Ethical Standard 4 (2010), 'Fees, remuneration and evaluation policies, litigation, gifts and hospitality', Available from: http://www.frc.org.uk/Our-Work/Publications/APB/ES-4-(Revised)-Fees,-remuneration-and-evaluation-p.aspx [viewed on 05/07/2013]

Ashbaugh, H., LaFond, R. and Mayhew, B.W. (2003), 'Do non-audit services compromise auditor independence: Further evidence', *The Accounting Review*, 78(3), pp. 611-639.

Asthana, S.C. and Boone, J.P. (2012), 'Abnormal audit fee and audit quality', *Auditing: A Journal of Practice and Theory*, 31(3), pp. 1-22.

Astami, E., Rusmin, R. and Hartadi, B. (2012), 'Cultural differences, audit quality and the surplus free cash flow-earnings management relation: Evidence from the Asian Pacific region', The universitas Teknologi Yogyakarta, Available from: http://www.google.co.uk/search?client=safari&rls=en&q=Cultural+differences,+Audit+Quality+and+the+Surplus+Free+Cash+Flow-Earnings+Management+Relation:+Evidence+from+the+Asian+Pacific+Region&ie=UTF-8&oe=UTF-8&gws_rd=cr&ei=rYE7UrnODceZ0AXUzoHQAw [viewed on 25/07/2013]

Ball, R. and Shivakumar, L. (2006), ` The role of accruals in asymmetrically timely fain and loss recognition', *Journal of Accounting Research,* 44, pp. 207-236.

Ballas, A. (2005), 'Market shares and concentration in the EU auditing industry', *European Accounting Association Annual Conference,* Gothenberg.

Becker, C., DeFond, M., Jiambalvo, J., and Subramanyam, K.R. (1998), 'The effect of audit quality on earnings management, *Contemporary Accounting Research*, 15(1), pp. 1-24.

Behn, B. and Kang, T. (2008), 'Audit quality and properties of analyst earnings forecasts', *The Accounting Review*, 83(2), pp. 327-359.

Bhundia, A. (2012), 'A comparative study between free cash flows and earnings management', University of Calcuta, pp. 123-129.

Blay, A.D. (2005), 'Independence threats, litigation risk, and the auditor's decision process', *Contemporary Accounting Research,* Winter, pp. 759-789.

Bonner, S. (1990), 'Experience effects in auditing: The role of task-specific knowledge', *The Accounting Review,* 65, pp. 72-92.

Brown, R. (1986), 'A history of accounting and accountants',

Edinburgh, TT and EC Jack 1905 and reprinted London, Frank Cass 1968.

Carcello, J. and Nagy, A. (2004), 'Audit firm tenure and fraudulent financial reporting', *Auditing: A Journal of Practice and Theory*, 23(2), pp. 55-69.

Chang, X., Dasgupta, S. and Hilary, G. (2009), 'The effect of auditor quality on financing decisions', *The Accounting Review*. 84(4), pp. 1085-1117.

Chi, W., Huang, H., Liao, Y. and Xie, H. (2005), 'Mandatory audit-partner rotation, audit quality and market perception: Evidence from Taiwan', Working paper, University of Illinois at Urbana-Champaign.

Chen, X. and Xia, L. (2006), 'The audit tenure and audit quality: The evidence from stock market in China', *The Accounting Research,* 1, pp. 44-53.

Chen, Y., Moroney, R. and Houghton, K. (2005), 'Audit committee composition and the use of an industry specialist audit firm',

Accounting and Finance, 45, pp. 217-239.

Chen, Q., Kelly, K. and Salterio, S. (2009), 'Do audit actions consistent with increased auditor skepticism deter potential management malfeasance?', Working paper, University of Waterloo, Carleton University and Queen's University.

Chow, C.W. (1982), 'The demand for external auditing: size, debt and ownership influences', *The Accounting Review*, April, pp. 272-291.

Chung, H. and Kallapur, S. (2003), 'Client importance, nonaudit services and abnormal accruals', *The Accounting Review,* 78(4), pp. 931-955.

Cohen, J., Krishnamoorthy, G. and Wright, A. (2004), 'The corporate governance mosaic and financial reporting quality', *Journal of Accounting Literature*, 23, pp. 87-148.

Colbert, G. and O'Keefe, T. (1995), 'Compliance with GAAS Reporting Standards: Evidence from a positive enforcement program', *Auditing: A Journal of Practice and Theory,* 14, pp.1-16.

CPAB (2010), 'Report on the 2010 inspections of the quality of audits conducted by Public Accounting Firms', Available from: http://www.cpab-ccrc.ca/EN/content/Public_Report_2009_Eng.pdf [viewed on 03/08/2013]

Daugherty, B., Dickins, D., Hatfield, R. and Higgs, J. (2013), 'Mandatory audit partner rotation perceptions of audit quality consequences', *Current issues in Auditing,* 7(1), pp. 30-35.

Dechow, P. and Dichev, I. (2002), 'The quality of accruals and earnings: The role of accrual estimation errors', *The Accounting Review,* 77(4), pp. 35-69.

DeAngelo, L. (1981), 'Auditor size and auditor quality', *Journal of Accounting and Economics*, December, pp. 183-199.

Dechow, P.M. (1994), 'Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals', *Journal of Accounting and Economics*, 18, pp. 3-42.

Dechow, P., Sloan, R. and Sweeney, A. (1995), 'Detecting earnings management', *The Accounting Review,* 70(2), pp.193-225.

Dechow, P., Sloan, R. and Sweeney, A. (1996), 'Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the SEC', *Contemporary Accounting Research,* 13, pp. 1-36.

DeFond, M.L. (1992), 'The associations between changes in client firm agency cost and auditor switching', *Auditing: A Journal of Practice and Theory*, 11(1), pp. 16-31.

Dies, D. and Giroux, G. (1992), 'Determinants of audit quality in the public sector', *The Accounting Review,* July, pp. 462-479.

Dies, D. and Giroux, G. (1996), 'The effect of auditor changes on audit fees, audit hours and audit quality', *Journal of Accounting and Public Policy,* 15, pp. 55-76.

Doogar, R., Sivadasan, P. and Solomon, P. (2010), 'The regulation of public company auditing: evidence from the transition to AS5', *Journal of Accounting Research,* 48, pp. 795-814.

Dopuch,N. and Simunic, D. (1980), 'The nature of competition in the

auditing profession: a descriptive and normative view', *In Regulation and the Accounting Profession*, 34(2): edited by Buckley, J. and Weston, F., pp. 283-289, CA: Lifetime Learning Publications.

Ebrahim, A. (2001), 'Auditing quality, auditor tenure, client importance and earnings management: An additional evidence', *Rutgers University,* Available from: http://aaahq.org/audit/midyear/02midyear/papers/Auditing%20Conference%20Paper.pdf [viewed on 20/07/2013]

Elsenberg, T. and Macey, J.R. (2004), 'Was Arthur Andersen different? An empirical examination of major accounting firm audits of large clients', *Journal of Empirical Legal Studies*, 1(2), pp. 263-300.

Einchenseher, J.W. and Shields, D. (1989), 'Corporate capital structure and auditor fit', *Advances in Accounting*, Supplement 1, pp. 39-56.

FAME (2013), Annual financial data, Available from: https://fame-bvdinfo-com.ezproxy.nottingham.ac.uk/version-201393/Search.QuickSearch.serv?_CID=1&context=2QP792ZPMQ1BKCS [viewed on 09/2013]

Fan, J.P.H., Titman, S. and Twite, G. (2010), 'An international comparison of capital structure and debt maturity choices', *Journal of Financial and Quantitative Analysis*, forthcoming.

Farmer, T., Rittenberg, L. and Trompeter, G. (1987), 'An investigation f the impact of economic and organizational factors on auditor independence', *Auditing: A Journal of Practice and Theory,* 7, pp. 1-14.

Firth, M. and Smith, A. (1992), 'Selection of auditor firms by companies in new issue market', *Applied Economics*, 24, pp. 247-255.

Francis, J. and Krishnan, J. (1999), 'Accounting accruals and auditor reporting conservatism', *Contemporary Accounting Research*, 16(1), pp. 135-165.

Francis, R.J. and Wilson, E. (1988), 'Auditor changes: A test of theories relating to agency cost and auditor differentiation', *The Accounting Review,* October, pp. 663-682.

Francis, J.R. (2011), 'A framework for understanding and researching

audit quality', *A Journal of Practice and Theory,* 30(2), pp. 125-152.

Frankel, R.M., Johnson, M.F. and Nelson, K.K. (2002), 'The relation between auditors' fees for nonaudit services and earnings management', *The Accounting Review*, 77(Supplement), pp. 71-105.

FTSE Factsheet (2012), FTSE All-Share Index, Available from: http://www.ftse.com/Indices/UK_Indices/Downloads/FTSE_All-Share_Index_Factsheet.pdf [viewed on 20/08/2013]

Fuerman, R.D. (2006), 'Comparing the auditor quality of Arthur Andersen to that of the Big 4', *Accounting and the Public Interest*, 6, pp. 135-161.

GAO (2003), Public Accounting Firms: Mandated study on consolidation and competition. *General Accounting Office,* Available from: http://www.gao.gov. [viewed on 13/08/2013]

Geiger, M.A. and Raghunandan, K. (2002), 'Auditor tenure and audit reporting failures', *Auditing: A Journal of Practice and Theory*, 21(1), pp. 67-78.

Ghosh, A. and Moon, D. (2005), 'Auditor tenure and perceptions of

audit quality', *The Accounting Review*, 80(2), pp. 585-612.

Ghoul, S., Guedhami, O., Pittman, J. and Rizeanu, S. (2011), 'Auditor quality and firm debt maturity: international evidence', Available from: http://web.uvic.ca/econ/research/papers/pdfs/Rizeanu.pdf [viewed on 15/07/2013]

Giannetti, M. (2003), 'Do better institutions mitigate agency problems? Evidence from corporate finance choices', *Journal of Financial and Quantitative Analysis*, 38, pp. 185-212.

Gramling, A. (1999), 'External auditors' reliance on work performed by internal auditors: The influence of fee pressure on this reliance decision', *Auditing: A Journal of Practice and Theory,* 18, pp. 117-135.

Hamilton, J., Ruddock, C., Stokes, D. and Taylor, S. (2005), 'Audit partner rotation, earnings quality and earnings conservatism', Working paper, University of New South Wales.

Hearly, P. and Lys, T. (1986), 'Auditor changes following Big-Eight takeovers of non Big-Eight firms', *Journal of Accounting and Public Policy*, Winter, pp. 251-265.

Hearly, P. and Wahlen, J. (1998), 'A review of the earnings management literature and its implications for standard setting', *Working paper*, Indiana University.

Hearly, P.M. and Palepu, K.G. (2003), 'How the quest for efficiency corroded the market', *Harvard Business Review,* 81(7), pp. 76-85.

Houston, R., Peters, M. and Pratt, J. (1999), 'The audit risk model, business risk and audit-planning decisions', *The Accounting Review,* 74, pp. 281-298.

Ireland, J.C. and Lennox, C.L. (2002), 'The large audit firm fee premium: A case of selectivity bias?', *Journal of Accounting*, *Auditing and Finance*, 7 (Winter), pp. 73-91.

Jackson, A.B., Moldrich, M. and Roebuck, P. (2008), 'Mandatory audit firm rotation and audit quality', *Managerial Auditing Journal*, 23(5), pp. 420-437.

Jensen, M.C. (1989), 'Agency costs of free cash flow, corporate finance and takeovers', *Am Econ Rev*, 76, pp. 323-329.

Jickling, M. (2010), The causes of the Financial Crisis, CRS report on Congress, *Congressional Research Service,* Available from: http://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?article=1605&context=key_workplace&sei-redir=1&referer=http%3A%2F%2Fwww.google.co.uk%2Furl%3Fsa%3Dt%26rct%3Dj%26q%3DCauses%2Bof%2Bthe%2BFinancial%2BCrisis%2BMark%2BJickling%26source%3Dweb%26cd%3D1%26ved%3D0CCwQFjAA%26url%3Dhttp%253A%252F%252Fdigitalcommons.ilr.cornell.edu%252Fcgi%252Fviewcontent.cgi%253Farticle%253D1605%2526context%253Dkey_workplace%26ei%3DcZo7Uq_pA8SX0AXLp4CIBg%26usg%3DAFQjCNEFfdB14pBzi3WhabMBP20WY2nhSw%26sig2%3DinCmvjvQTt__6obNxFRoAw#search=%22Causes%20Financial%20Crisis%20Mark%20Jickling%22 [viewed on 20/08/2013]

Johnson, C. (2005), 'Public companies complain to SEC about audit costs', *Washington Post,* April 9: E01.

Johnson, V., Khurana, I., Reynolds, J. (2002), 'Audit-firm tenure and the quality of financial reports', *Contemporary Accounting Research*, 19(4), pp. 637-660.

Johnson, W.B. and Lys, T. (1990), 'The market for audit services: Evidence from voluntary auditor changes', *Journal of Accounting and Economics*, January, pp. 281-308.

Jones, J. (1991), 'Earnings management during import relief investigations', *Journal of Accounting Research,* 29(1), pp. 193-228.

Khurana, I.K. and Raman, K.K. (2004), 'Litigation risk and the financial reporting credibility of Big 4 versus non-Big 4 audits: Evidence from Anglo-American countries', *The Accounting Review*, 79(2), pp. 473-495.

Knechel, W.R. and Willekens, M. (2006), 'The role of risk management and governance in determining audit demand', *Journal of Business Finance and Accounting,* 33(9), pp. 1344-1367.

Kaminsky, G.L. and Reinhart C.M. (1999), The twin crises: the causes of banking and balance-of-payments problems. *The American economic review*, 89(3), 473-500.

Kinney, W.R. and Libby, R. (2002), 'Discussion of the relation between auditors' fees for nonaudit services and earnings

management', *The Accounting Review,* 77(Supplement), pp. 107-114.

Kinney, W.R., Palmrose, Z.V. and Scholz, S. (2004), 'Auditor independence, non-audit services and restatements: Was the U.S. government right?', *Journal of Accounting research*, 42(3), pp. 561-588.

Knechel, W., Krishnan, G.,Pevzner, M., Shefchik, L. and Velury, U. (2013), 'Audit quality: insights from the academic literature', *Auditing: A Journal of Practice and Theory,* 32, pp. 385-421.

Krishnan, G. (2002), 'Audit quality and the pricing of discretionary accruals', *Auditing: A Journal of Practice and Theory,* 22(1), pp. 109-126.

Krishnan, J. and Schauer, P.C. (2000), 'The differentiation of quality among auditors: Evidence from the not-for –profit sector', *Auditing: A Journal of Practice and Theory,* 19(2), pp. 9-26.

Krishnan, J., Krishnan, J. and Song, H. (2011), 'The effect of Auditing standard No. 5 on audit fees', *Auditing: A Journal of Practice and*

Theory, 30(4), pp. 1-27.

Larcker, D.F. and Richardson, S.A. (2004), 'Fees paid to audit firms, accrual choices and corporate governance', *Journal of Accounting Research*, 42(3), pp. 625-658.

Lawrence, A., Zhang, P. and Meza, M.M. (2011), 'Can Big 4 versus non-Big 4 differences in audit-quality proxies be attributed to client characteristics?', *The Accounting Review*, 86(1), pp. 259-286.

Mansi, S., Maxwell, W. and Miller, D. (2004), 'Does auditor quality and tenure matter to investors? Evidence from the bond market', *Journal of Accounting Research,* 42(4), pp. 755-794.

Magee, R. and Tseng, M. (1990), 'Audit pricing and independence', *The Accounting Review,* 65(2), pp. 315-336.

Manry, D.L., Mock, J.T. and Turner, J.L. (2003), 'Does increased audit partner tenure reduce audit quality?', *Journal of Accounting, Auditing and Finance,* pp. 553-572.

Muradoglu, G. Shefrin, H. Staikouras, S.K. and De Bondt, W. (2008),

Behavioral finance: quo vadis? *Journal of applied finance* [online]. Fall/Winter. 1-15 Available from: http://behavioralfinance.depaul.edu/docs/PublicationsResources/DeBondt_et_al._Behavioral_finance,_quo_v.pdf [viewed on 20/08/2013].

Nagy, A. (2005), 'Mandatory audit firm turnover, financial reporting quality and client bargaining power: The case of Arthur Andersen', *Accounting Horizons,* 19(2), pp. 51-68.

Onder, T., Aksu, M.H. and Balci, Y. (n.d.), 'Auditor selection in the Istanbul stock exchange', Available from: http://www.google.co.uk/url?sa=t&rct=j&q=Auditor+selection+in+the+Istanbul+stock+exchange+Onder&source=web&cd=1&ved=0CC4QFjAA&url=http%3A%2F%2Fpeople.sabanciuniv.edu%2F~maksu%2Fpapers%2FAuditorSelection.doc&ei=UHE7UoTmO6qg0wW28oDoBw&usg=AFQjCNG3-XPKQgIesFAiKA3s8Om9Z_eqmg&sig2=74AsLB8ynLtmph54CEZsyw [viewed on 07/07/2013]

Oxera (2006), 'Competition and choice in the UK audit market: prepared for department of Trade and Industry and Financial Reporting Council', Availablde from:

http://www.frc.org.uk/FRC-Documents/FRC/Competition-and-Choice-in-the-UK-Audit-Market.aspx [viewed on 15/08/2013]

Palmrose, Z.V. (1988), 'An analysis of auditor litigation and audit service quality', *The Accounting Review*, 63(1), pp. 55-73.

Reynolds, J. and Francis, J. (2001), 'Does size matter? The influence of large clients on office-level auditor reporting decisions', *Journal of Accounting and Economics,* 30(1), pp. 375-400.

Reynolds, J.L., Deis, D. and Francis, J.R. (2004), 'Professional service fees and auditor objectivity', *A Journal of Practice and Theory*, 23(1), pp. 29-52.

Richardson, S. (2006), 'Over-investment of free cash flow', *Review of Accounting Studies*, 11(2), pp. 159-189.

Scott, W. (1997), 'Financial Accounting Theory', Prentice Hall, Canada Inc.

Shefrin, H. (2000), Beyond greed and fear: understanding behavioural finance and the psychology of investing. Boston: Harvard

business school press, pp.1-42.

Simunic, D. (1980), 'The pricing of audit services: Theory and evidence', *Journal of Accounting Research*, 18(1), pp. 161-190.

Simunic, D.A. and Stein, M. (1987), 'Product differentiation in auditing: a study of auditor choice in the market for unseasoned new issues', *Canadian Certified General Accountants' Research Foundation.*

Srinidhi, B.N. and Gul, F.A, (2007), 'The differential effects of auditors' nonaudit and audit fees on accrual quality', *Contemporary Accounting Research,* 24(2), pp. 595-629.

Taffler, R.J. Agarwal, V. and Mokoteli, T.M. (2009), Behavioural bias and conflicts of interest in analyst stock recommendations. *Journal of business finance and accounting*, April/May, 36(3)&(4), 384-418.

Tversky, A. and Kahneman, D. (1979), Prospect theory: an analysis of decision making under risk. *Econometrica*, 47, 263-291.

U.S. Senate (2002), 'Senate Report 107-205: Public Company Accounting Reform and Investor Protection Act of 2002, Report of the Committee on Banking, Housing and Urban Affairs, United States Senate, To accompany S. 2673, Together with Additional Views', Available from: http://frwebgate.access.gpo.gov/cpi-bin/getdoc.cgi?dbname=107_cong_reports&docid=f:sr205.107.pdf. [viewed on 17/08/2013]

Wang D. and Zhou J. (2012), 'The impact of PCAOB auditing standard No.5 on audit fees and audit quality' *Accounting Horizons,* 26(3), pp. 493-511.

Wei, K.C.J. and Zhang, Y. (2008), 'Ownership structure, cash flow and capital investment: Evidence from East Asian Economics before the financial crisis', *Journal of Corporate Finance*, 14(2), pp. 118-132.

Young, S. (1999), 'Systematic measurement error in estimation of accruals: An evaluation of alternative modeling procedures', *Journal of Business Finance and Accounting,* 26(7), pp. 833-862.

Zerni, M. (2009), 'Essays on audit quality', Universitatis Oulusensis, Available from:

http://herkules.oulu.fi/isbn9789514292927/isbn9789514292927.pdf [viewed on 15/08/2013]

Chapter 7: Appendix

Appendix 1

2007

Source	SS	df	MS
Model	.124584296	7	.017797757
Residual	.28979909	39	.007430746
Total	.414383385	46	.009008334

Number of obs = 47
F(7, 39) = 2.40
Prob > F = 0.0387
R-squared = 0.3006
Adj R-squared = 0.1751
Root MSE = .0862

da2007	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
size2007	-.0029298	.0056376	-0.52	0.606	-.014333	.0084734
leverage2007	.1327463	.0422203	3.14	0.003	.0473476	.2181449
lnaf2007	-.0309911	.0179626	-1.73	0.092	-.0673239	.0053417
lnnaf2007	.0226181	.0160648	1.41	0.167	-.009876	.0551122
big42007	.0070624	.0710087	0.10	0.921	-.1365663	.1506912
ft2007	-.0453021	.0372416	-1.22	0.231	-.1206303	.0300261
cfo2007	-.2480641	.1546278	-1.60	0.117	-.5608284	.0647002
_cons	.0072588	.0625337	0.12	0.908	-.1192277	.1337452

Source	SS	df	MS
Model	.124601804	7	.017800258
Residual	.289769131	39	.007429978
Total	.414370936	46	.009008064

Number of obs = 47
F(7, 39) = 2.40
Prob > F = 0.0386
R-squared = 0.3007
Adj R-squared = 0.1752
Root MSE = .0862

mda2007	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
size2007	-.0029245	.0056373	-0.52	0.607	-.0143271	.0084781
leverage2007	.1327445	.0422181	3.14	0.003	.0473502	.2181387
lnaf2007	-.0310052	.0179617	-1.73	0.092	-.0673361	.0053257
lnnaf2007	.022623	.016064	1.41	0.167	-.0098694	.0551155
big42007	.007063	.0710051	0.10	0.921	-.1365583	.1506842
ft2007	-.0453124	.0372397	-1.22	0.231	-.1206368	.0300119
cfo2007	-.2481057	.1546198	-1.60	0.117	-.5608538	.0646424
_cons	.0072458	.0625305	0.12	0.908	-.1192341	.1337257

Appendix 2

2008

Source	SS	df	MS
Model	.022269906	7	.003181415
Residual	.241190499	39	.006184372
Total	.263460405	46	.0057274

Number of obs = 47
F(7, 39) = 0.51
Prob > F = 0.8181
R-squared = 0.0845
Adj R-squared = -0.0798
Root MSE = .07864

da2008	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
size2008	.0025662	.0074386	0.34	0.732	-.0124799	.0176122
leverage2008	-.0074279	.0441469	-0.17	0.867	-.0967234	.0818676
lnaf2008	.001999	.0155469	0.13	0.898	-.0294475	.0334455
lnnaf2008	-.0005495	.0153357	-0.04	0.972	-.0315689	.0304699
big42008	-.0521444	.0715979	-0.73	0.471	-.1969648	.092676
ft2008	-.021885	.0472365	-0.46	0.646	-.1174299	.0736599
cfo2008	-.1411507	.1167452	-1.21	0.234	-.3772903	.0949888
_cons	.0476208	.0577343	0.82	0.414	-.0691578	.1643995

Source	SS	df	MS
Model	.022272064	7	.003181723
Residual	.241192695	39	.006184428
Total	.263464759	46	.005727495

Number of obs = 47
F(7, 39) = 0.51
Prob > F = 0.8180
R-squared = 0.0845
Adj R-squared = -0.0798
Root MSE = .07864

mda2008	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
size2008	.0025659	.0074387	0.34	0.732	-.0124803	.017612
leverage2008	-.007435	.0441471	-0.17	0.867	-.0967309	.081861
lnaf2008	.0020097	.0155469	0.13	0.898	-.029437	.0334563
lnnaf2008	-.0005583	.0153358	-0.04	0.971	-.0315779	.0304613
big42008	-.0521433	.0715982	-0.73	0.471	-.1969643	.0926777
ft2008	-.0218914	.0472368	-0.46	0.646	-.1174367	.073654
cfo2008	-.1411388	.1167458	-1.21	0.234	-.3772794	.0950018
_cons	.0476225	.0577346	0.82	0.414	-.0691567	.1644016

Appendix 3

2009

Source	SS	df	MS	Number of obs =	47
				F(7, 39) =	3.94
Model	.093601144	7	.013371592	Prob > F =	0.0024
Residual	.132237873	39	.003390715	R-squared =	0.4145
				Adj R-squared =	0.3094
Total	.225839017	46	.004909544	Root MSE =	.05823

da2009	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
size2009	.0041162	.00556	0.74	0.464	-.00713	.0153623
leverage2009	-.0234892	.0557235	-0.42	0.676	-.1362006	.0892222
lnaf2009	.0143723	.008625	1.67	0.104	-.0030734	.031818
lnnaf2009	-.0092685	.0072638	-1.28	0.210	-.0239608	.0054238
big42009	-.0497394	.050606	-0.98	0.332	-.1520998	.052621
ft2009	-.0465138	.0382917	-1.21	0.232	-.1239662	.0309385
cfo2009	-.4452116	.1146312	-3.88	0.000	-.6770752	-.2133481
_cons	.0625042	.0376281	1.66	0.105	-.0136057	.1386141

Source	SS	df	MS	Number of obs =	47
				F(7, 39) =	3.94
Model	.093605458	7	.013372208	Prob > F =	0.0024
Residual	.132238152	39	.003390722	R-squared =	0.4145
				Adj R-squared =	0.3094
Total	.22584361	46	.004909644	Root MSE =	.05823

mda2009	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
size2009	.0041162	.00556	0.74	0.464	-.00713	.0153623
leverage2009	-.023489	.0557236	-0.42	0.676	-.1362006	.0892225
lnaf2009	.0143726	.008625	1.67	0.104	-.003073	.0318183
lnnaf2009	-.0092686	.0072638	-1.28	0.209	-.023961	.0054237
big42009	-.049745	.0506061	-0.98	0.332	-.1521055	.0526154
ft2009	-.0465138	.0382918	-1.21	0.232	-.1239662	.0309386
cfo2009	-.4452153	.1146314	-3.88	0.000	-.6770791	-.2133514
_cons	.0625087	.0376281	1.66	0.105	-.0136013	.1386187

Appendix 4

2010

Source	SS	df	MS
Model	.050417277	7	.007202468
Residual	.629964248	39	.016152929
Total	.680381525	46	.014790903

Number of obs = 47
F(7, 39) = 0.45
Prob > F = 0.8668
R-squared = 0.0741
Adj R-squared = -0.0921
Root MSE = .12709

da2010	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
size2010	.0070505	.0113878	0.62	0.539	-.0159835	.0300845
leverage2010	.0186394	.0969074	0.19	0.848	-.1773742	.2146531
lnaf2010	-.0174419	.0235453	-0.74	0.463	-.0650667	.0301829
lnnaf2010	-.002752	.0202743	-0.14	0.893	-.0437607	.0382567
big42010	-.0380019	.1354889	-0.28	0.781	-.312054	.2360502
ft2010	-.0214954	.0636058	-0.34	0.737	-.1501503	.1071596
cfo2010	-.266663	.1894964	-1.41	0.167	-.6499557	.1166297
_cons	.046166	.1588785	0.29	0.773	-.2751961	.3675282

Source	SS	df	MS
Model	.050418651	7	.007202664
Residual	.629973547	39	.016153168
Total	.680392198	46	.014791135

Number of obs = 47
F(7, 39) = 0.45
Prob > F = 0.8668
R-squared = 0.0741
Adj R-squared = -0.0921
Root MSE = .1271

mda2010	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
size2010	.0070508	.0113879	0.62	0.539	-.0159834	.0300849
leverage2010	.0186386	.0969081	0.19	0.848	-.1773765	.2146537
lnaf2010	-.0174423	.0235454	-0.74	0.463	-.0650674	.0301829
lnnaf2010	-.002752	.0202745	-0.14	0.893	-.043761	.0382569
big42010	-.0379939	.1354899	-0.28	0.781	-.312048	.2360602
ft2010	-.0214976	.0636063	-0.34	0.737	-.1501535	.1071583
cfo2010	-.2666657	.1894978	-1.41	0.167	-.6499612	.1166299
_cons	.0461595	.1588797	0.29	0.773	-.275205	.3675239

Appendix 5

2011

Source	SS	df	MS		
Model	.021109898	7	.0030157	Number of obs	= 47
Residual	.115980103	39	.002973849	F(7, 39)	= 1.01
				Prob > F	= 0.4366
Total	.13709	46	.002980217	R-squared	= 0.1540
				Adj R-squared	= 0.0021
				Root MSE	= .05453

da2011	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
size2011	.0045401	.0048691	0.93	0.357	-.0053085	.0143887
leverage2011	-.0682761	.0344455	-1.98	0.055	-.1379487	.0013965
lnaf2011	-.005558	.012232	-0.45	0.652	-.0302996	.0191835
lnnaf2011	.0059951	.0094605	0.63	0.530	-.0131406	.0251308
big42011	.0116633	.0582652	0.20	0.842	-.1061892	.1295159
ft2011	-.0086812	.0274327	-0.32	0.753	-.0641691	.0468067
cfo2011	-.0967947	.0794066	-1.22	0.230	-.2574096	.0638203
_cons	-.0131435	.0705087	-0.19	0.853	-.1557608	.1294739

Source	SS	df	MS		
Model	.195417082	7	.027916726	Number of obs	= 47
Residual	.64611824	39	.016567134	F(7, 39)	= 1.69
				Prob > F	= 0.1413
Total	.841535321	46	.018294246	R-squared	= 0.2322
				Adj R-squared	= 0.0944
				Root MSE	= .12871

mda2011	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
size2011	.0283404	.0114924	2.47	0.018	.0050949	.051586
leverage2011	-.0667609	.0813012	-0.82	0.417	-.2312081	.0976862
lnaf2011	-.0342259	.028871	-1.19	0.243	-.092623	.0241713
lnnaf2011	-.0033351	.0223295	-0.15	0.882	-.0485008	.0418306
big42011	-.1429963	.1375225	-1.04	0.305	-.4211617	.1351691
ft2011	-.064011	.064749	-0.99	0.329	-.1949783	.0669562
cfo2011	.166162	.1874221	0.89	0.381	-.212935	.5452589
_cons	.0758291	.1664206	0.46	0.651	-.2607883	.4124465

Appendix 6

The overall

Source	SS	df	MS		
Model	.143592277	7	.020513182	Number of obs =	235
Residual	1.66197724	227	.007321486	F(7, 227) =	2.80
				Prob > F =	0.0081
Total	1.80556951	234	.007716109	R-squared =	0.0795
				Adj R-squared =	0.0511
				Root MSE =	.08557

da	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
size	.0003715	.0029602	0.13	0.900	-.0054615	.0062046
leverage	.0361442	.0219447	1.65	0.101	-.0070971	.0793855
lnaf	-.0037277	.0066729	-0.56	0.577	-.0168765	.0094211
lnnaf	.0029345	.0058659	0.50	0.617	-.008624	.014493
big4	-.0346391	.0326397	-1.06	0.290	-.0989546	.0296765
ft	-.0302103	.0178912	-1.69	0.093	-.0654644	.0050439
cfo	-.1932286	.0569041	-3.40	0.001	-.3053565	-.0811008
_cons	.0422172	.0303758	1.39	0.166	-.0176374	.1020719

Source	SS	df	MS		
Model	.131167255	7	.018738179	Number of obs =	235
Residual	2.65096771	227	.011678272	F(7, 227) =	1.60
				Prob > F =	0.1351
Total	2.78213496	234	.011889466	R-squared =	0.0471
				Adj R-squared =	0.0178
				Root MSE =	.10807

mda	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
size	.0059498	.0037387	1.59	0.113	-.0014172	.0133167
leverage	.0210931	.0277152	0.76	0.447	-.0335189	.0757051
lnaf	-.0099586	.0084277	-1.18	0.239	-.026565	.0066479
lnnaf	.0023133	.0074084	0.31	0.755	-.0122847	.0169112
big4	-.052004	.0412227	-1.26	0.208	-.133232	.0292241
ft	-.0393225	.0225959	-1.74	0.083	-.0838471	.0052021
cfo	-.118885	.0718676	-1.65	0.099	-.260498	.022728
_cons	.0482454	.0383635	1.26	0.210	-.0273486	.1238394

The appendix 7:

The correlation between independent variables

2007

	size2007	lev~2007	lnaf2007	lnn~2007	big42007	ft2007	cfo2007
size2007	1.0000						
leverage2007	0.5907	1.0000					
lnaf2007	0.4463	0.3371	1.0000				
lnnaf2007	0.2431	0.2692	0.7302	1.0000			
big42007	0.3129	0.3435	0.1126	0.0330	1.0000		
ft2007	0.3440	0.3385	-0.1113	-0.0886	0.4055	1.0000	
cfo2007	0.4446	0.3821	0.1771	-0.0481	0.2528	0.2179	1.0000

2008

	size2008	lev~2008	lnaf2008	lnn~2008	big42008	ft2008	cfo2008
size2008	1.0000						
leverage2008	0.6573	1.0000					
lnaf2008	0.4780	0.1305	1.0000				
lnnaf2008	0.3185	-0.0328	0.8652	1.0000			
big42008	0.3711	0.3308	0.1175	0.0564	1.0000		
ft2008	0.3840	0.4271	0.1121	-0.0293	0.5511	1.0000	
cfo2008	0.3781	0.1755	-0.0033	-0.0188	0.1718	-0.1109	1.0000

2009

	size2009	lev~2009	lnaf2009	lnn~2009	big42009	ft2009	cfo2009
size2009	1.0000						
leverage2009	0.6820	1.0000					
lnaf2009	0.4751	0.2793	1.0000				
lnnaf2009	0.2314	0.2869	0.6808	1.0000			
big42009	0.3627	0.4315	0.1899	0.0399	1.0000		
ft2009	0.4739	0.4926	0.2091	0.1597	0.6826	1.0000	
cfo2009	0.3492	0.0686	0.0603	-0.1338	0.1722	0.0611	1.0000

2010

	size2010	lev~2010	lnaf2010	lnn~2010	big42010	ft2010	cfo2010
size2010	1.0000						
leverage2010	0.6191	1.0000					
lnaf2010	0.5901	0.3158	1.0000				
lnnaf2010	0.3571	0.1415	0.6523	1.0000			
big42010	0.1255	0.2869	0.0886	0.0059	1.0000		
ft2010	-0.0365	0.0078	0.2156	0.1916	-0.0509	1.0000	
cfo2010	0.1909	0.2070	-0.0442	-0.0729	0.1178	0.0104	1.0000

2011

	size2011	lev~2011	lnaf2011	lnn~2011	big42011	ft2011	cfo2011
size2011	1.0000						
leverage2011	0.4183	1.0000					
lnaf2011	0.6043	0.2018	1.0000				
lnnaf2011	0.4259	0.1401	0.7515	1.0000			
big42011	0.1081	0.2404	0.0981	0.0133	1.0000		
ft2011	-0.0113	-0.0467	0.1990	0.1093	-0.0509	1.0000	
cfo2011	0.0417	0.1476	-0.1481	0.0080	-0.1718	0.1221	1.0000

The overall

	size	leverage	lnaf	lnnaf	big4	ft	cfo
size	1.0000						
leverage	0.5738	1.0000					
lnaf	0.4974	0.2269	1.0000				
lnnaf	0.2904	0.1496	0.7409	1.0000			
big4	0.2856	0.3232	0.1266	0.0301	1.0000		
ft	0.2668	0.2587	0.1214	0.0593	0.3733	1.0000	
cfo	0.2963	0.2142	0.0058	-0.0505	0.1259	0.0713	1.0000